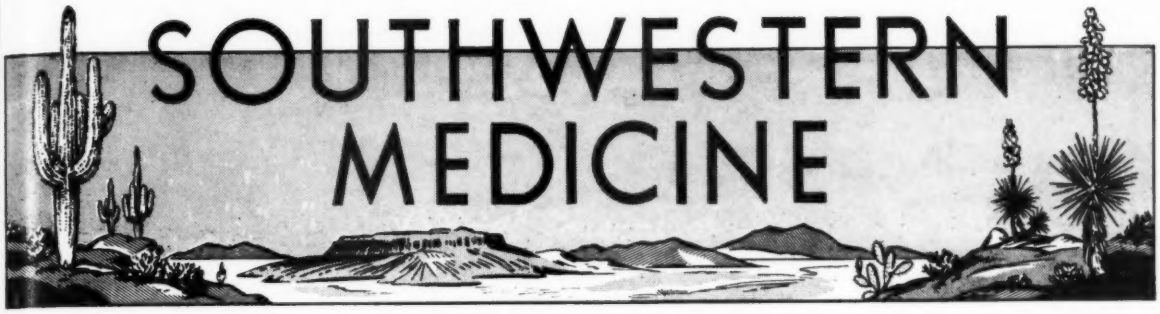
Medical Library APR 10 1945



Volume XXVI EL PASO, TEXAS, NOVEMBER, 1942 Number 11

CONTENTS

SCIENTIFIC SECTION

THE TREATMENT OF HYDRONEPHROSIS 357
FRANK HINMAN, M. D., *San Francisco*

SURGERY OF THE THYROID GLAND 368
HARRY A. BARNES, M. D., *Flagstaff, Arizona*

AMERICA AT WAR 376

EDITORIALS

HONOR ROLL 355

OHIO'S NICE GESTURE 357

SOCIETY ACTIVITIES

SOUTHWESTERN MEDICAL ASSOCIATION 378

EL PASO COUNTY (TEXAS) MEDICAL SOCIETY 379

ARIZONA STATE MEDICAL ASSOCIATION 379

MISCELLANY 396

BOOK NOTES 404

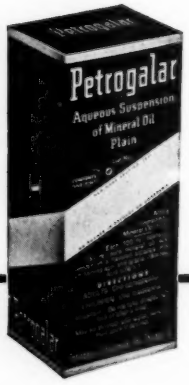
Official Journal of
Arizona State Medical Association *New Mexico Medical Society*
El Paso County (Texas) Medical Society
Southwestern Medical Association

"ALL OUT OF STEP BUT JIM!"

● Intelligent Army supervision soon corrects the errors of new recruits. But in civilian life errors in personal health habits usually must be corrected by the physician.

When constipation exists, the return to regular comfortable bowel movement may often be accomplished with the aid of Petrogalar.* It helps to soften hard, dry fecal masses, rendering the stool mobile and easy to eliminate.

Consider Petrogalar for the treatment of constipation. It is palatable, economical and effective.



FOR THE TREATMENT OF CONSTIPATION

—Petrogalar—

*Reg. U. S. Pat. Off. Petrogalar is an aqueous suspension of pure mineral oil each 100 cc. of which contains 65 cc. pure mineral oil suspended in an aqueous jelly containing agar and acacia.

Petrogalar Laboratories, Inc. • 8134 McCormick Boulevard • Chicago, Illinois

SOUTHWESTERN MEDICINE

Vol. XXVI NOVEMBER, 1942 No. 11

OFFICIAL JOURNAL
Arizona State Medical Association
New Mexico Medical Society
Southwestern Medical Association
El Paso County (Texas) Medical Society

EDITOR
M. P. Spearman, M. D.
2300 Grant Avenue
El Paso, Texas

ASSOCIATE EDITORS
L. B. Cohenour, M. D. Albuquerque, New Mexico
Louis W. Breck, M. D. El Paso, Texas
J. D. Hamer, M. D. Phoenix, Arizona
Wm. John Pangman, M. D. El Paso, Texas

Two dollars per year 25c single copy

Entered at the postoffice at Phoenix, Arizona, as second-class matter.

Acceptance for mailing at special rate of postage provided for in section 1103. Act of October 3, 1917, authorized March 1, 1921.

ADVERTISING OFFICES
A. C. Taylor Printing Company
142 South Central Avenue
Phoenix, Arizona

SUBSCRIPTION OFFICES
D. F. Harbridge, M. D.
822 Professional Building
Phoenix, Arizona

Eastern Representative:
Cooperative Medical Advertising Bureau
535 N. Dearborn St., Chicago

HONOR ROLL

As of the latter part of October, 1942, a total of 105 Arizona physicians were in Army or Navy service. Thirty-six El Paso doctors have gone to war. New Mexico has sent 81 physicians to the Army or Navy. When the small total number of physicians resident in the Southwest is considered, it is apparent that this area has to date contributed heavily to the demands of the armed services. More must go, however. And the sooner those eligible realize that the call is urgent, the sooner this war will be won. Meanwhile, it is with pride that we publish the current list of Southwestern physicians now serving the United States of America:

ARIZONA

ARMY

AARNI, John
ARNOLD, A. A.
BANK, Joseph
BARKER, C. J.
BATE, Thos. H.
BENDHEIM, O. L.
BORAH, Chas. E.
BORN, E. H.
BRAINARD, H. H.
BREGMAN, E. H.
BRIZZOLARA, C. M.
BROWN, Preston T.
CHALMERS, Duncan
CONDELL, Lyle A.
CRAIG, C. C.
CREIGHTON, C. C.
DILLON, Emerson D.
DYSART, Palmer
ENGELDER, A. E.
FILLMORE, A. J.
FLOOD, C. E.
FRANCIS, J. Donald
GOODRUM, Wm. A.
GRAHAM, Duncan
GUNTER, Manning
GWINN, Frank W.
HAINES, R. S.
HALL, N. D.
HASTINGS, R. E.
HEIN, Walter F.
HERZBERG, Benj.
HEWITT, Roy W.
HOLBROOK, W. Paul
HUSSONG, R. W.
JOLLEY, E. B.
KAUFMAN, Jack
KETCHERSIDE, H. D.
KIMBALL, A. P.
KIRMSE, Alvin
KNIGHT, F. W.
KOEHN, Carl
KOHL, H. W.
LEWIS, Donald B.
LITTLEFIELD, J. B.
McNALLY, Jos. P.
MANDELL, M. M.
MATTS, R. M.
MAURY, F. H.
MERRILL, M. W.
MIKELL, John S.
MILLS, C. S.
MONTGOMERY, R. E.
NOON, Z. B.
OLIVER, Claude
O'NEIL, J. T.
PALMER, E. P., Jr.
PALMER, Max P.
PAQUET, J. F.
PATT, H. H.
PERKINS, F. P.
POLSON, Donald A.
PORTER, Dwight H.
POWELL, Charles S.
PURCELL, H. M.
SABA, Joseph
SARLIN, C. N.
SCHLECTE, M. C.
SCHNABEL, G. P.
SECRIST, D. L.
SHAPIRO, David
SHULTZ, W. L.
SHUPE, Reed
SICKLER, James
SMITH, Leslie B.
SNOW, W. G.
SOUTHWORTH, H. T.
STANLEY, John F.
STEEN, W. B.
STUMP, Robert M.

SULT, Chas. W., Jr.
THAYER, Kent
THOENY, O. W.
THOMAS, John Wix
TRUMAN, Geo. C.
TUVESON, L. L.
URE, W. G.
VAN EPPS, C. E.
YOUNTS, C. E., Jr.
WALSH, J. W.
WARRENBURG, C. B.
WHEELER, Norman O.
WILLIAMS, O. O.

NAVY

BRINKERHOFF, D. E.
CALLANDER, R. J.
CONDON, D. J.
GREER, Joseph M.
HICKS, R. A.
KIMBALL, Robert M.
LEUTZ, Joseph
PALMER, Paul V.
PIEPERGERDES, C. C.
SMITH, W. Jewell
STORTS, B. P.
SWASEY, Lloyd W., Jr.
WILKINSON, Arthur

EL PASO

ARMY

BASOM, Compere
BRECK, Louis W.
BRITTON, Bloyce
CAMERON, David
CAUSEY, E. G.
CURTIS, Wiekliffe
EPSTEIN, I. M.
GALLAGHER, Paul
GAMBRELL, J. H.
GOODLOE, B. L.
GOODWIN, Frank A.
HAFFNER, Heinz
HART, M. S.
HATFIELD, H. D.
HUGHES, Raymond P.
HYSLOP, J. R.
KEARNEY, W. W.
MULTHAUF, A. W.
PETTICOLAS, John D.
RANDEL, Brown
ROBBINS, J. B.
RODARTE, Reuben
SNIDOW, Frances
STEVENSON, W. H.
WALKER, Newton

NAVY

AWE, Chester
BLACK, A. P.
COX, L. T.
EVANS, F. G.
FOWLER, J. T.
HOMAN, Ralph
HUNTER, C. D.
RAVEL, Vincent
SPEARMAN, M. P.
VON BRIESEN, Delphin
WEBB, C. E.

NEW MEXICO

ARMY

ATKINSON, George
BARZUNE, Benjamin
BEAM, Mark P.
BIELINSKI; Henry E.
BICKEL, Robert D.
BUCKHOLTS, Walter H.
CANTRELL, William B.
CAYLOR, Robert N.
CLAUSER, Alvin R.
COLVARD, George T.
COOK, Laurence C.
COOKE, Lane B.
DAVIET, Leslie L.
DILLON, Jackson C.
ELLIS, Herbert B., Jr.
EVANS, Leland S.
FERRELL, Lee F.
GARDNER, Horace T.
GILLETT, Hilton W.
GLASIER, Wliliam A.
GONZALES, Saturnino M.
GOODMAN, Sylvan C.
GREELEY, Robert H.
GROSSMAN, J. W.
GWINN, Clay
HACKLER, Harold W.
HAIRE, Robert D., Jr.
HODDE, Henry W.
HOOVER, Thomas B.
JANUARY, Harold L.
JENNINGS, Aubrey L.
KAUFMAN, Benjamin H.
KEMPERS, Bert
KOFF, Salmon A.
KYON. B. B. (Reported killed in action.)
LAMON, John D., Jr.
LANCASTER, George M.
LANDER, E. W.
LAWRENCE, Gerald P.
LEHMAN, Herman O.
LEVINE, Milton
LONG, Julian O.
LYONS, Robert E.
MAISEL, Albert L.
MALDONADO, Jose
MALONE, E. L.
MARSHALL, U. S.
MENDELSON, Ralph W.
METZGER, Elisha A.
MILLER, Hubert A.
MONSON, Kenneth R.
MORGAN, Thomas L.
OCHS, Jacob
OWENS, Ross
PATTERSON, Edwin A.
PAVLETICH, Louis M.
PAWOL, Sylvester E.

PEACOCK, Wendell H.
POND, Ashley
RADCLIFFE, William D., Jr.
RAMER, Samuel M.
RAY, J. W.
RICE, Lucien G., Jr.
RILEY, Richard M.
ROSENBAUM, Myron Gordon
ROWE, Frank Arthur
SPEED, Henry K., Jr.
STARK, Walter A.
STONE, Coy S.
TRITT, Earl F.
TUBBS, William M.
WAGGONER, Richard P.
WIER, David T.
WILSON, Robert B.
WHISTLER, Carl W.

NAVY

ARMSTRONG, Theodore H.
BALLENGER, Irby B.
BUCKMAN, Joseph Harry
DUFF, Percival A.
POPPEN, M. D.
ROBERTS, Bennett

OHIO'S NICE GESTURE

Everyone knows that when a doctor leaves his home and his hard-won practice to enter the service of his country he may as well kiss that practice adios. It just cannot be any other way, for the doctor's services to his families are personal, and depend upon continuity for a great part of their value. So, when that continuity is interrupted the chances are good that the lost thread can never be picked up again.

Nevertheless, the problem of post-war adjustments between the returning doctors and their one-time patients has been the subject of much study by all concerned. As a partial solution, we rather like the procedure of the Ohio State Medical Society which posts cards in the offices of the doctors at home. The card says:

OUR OBLIGATION

Perhaps the physician who has been providing you with medical services is one of the many Ohio physicians now on duty with the Army and Navy.

While he is making this sacrifice for you and me, you may count on those of us who remain on the home front to do our utmost to meet your medical needs.

However, it is my sincere hope that when your doctor returns, you will resume your former relationship with him.

_____, M. D.

The Treatment of Hydronephrosis

FRANK HINMAN, M. D.
San Francisco

HYDRONEPHROSIS is the pathological condition of dilatation of the renal pelvis and atrophy of the renal parenchyma. It occurs only with obstruction to the outflow of urine. Although theoretically interesting and important, a discussion of the clinical aspects of the pathogenesis of hydronephrosis will be omitted. Back pressure, of course, is the initial factor, but the atrophic changes of the renal parenchyma are the result of anemia as well as presure.

TYPES

Clinically the types of hydronephrosis are divided according to the location and degree of the obstruction. An obstruction of a major calyx or one of its minor branches, for example, produces the localized condition of hydrocalycosis. A block at the ureteropelvic juncture produces the typical hydronephrosis, while that of the ureter produces the same pyelorenal changes together with alterations in the ureter above the point of its obstruction. An obstruction at the vesical neck produces the changes of back pressure in the bladder and, if mild and prolonged, changes in the ureters and kidneys may follow. The result may be bilateral dilatation and tortuosity of the ureters and bilateral hydronephroses (Table I), or the effect of back pressure may be on one side only, the opposite ureter and kidney remaining unaffected. In prolonged, mild types of obstruction, such as occur with median bars, it is not uncommon for a diverticulum to develop in the region of one ureteral orifice, which remains functionally competent, the ureter and renal pelvis above being unaffected, and for the other ureteral orifice to give way, transmitting the back pressure and causing the development of hydro-ureter and

From the Department of Surgery, Division of Urology, University of California Medical School. Presented to the Fifty-first Annual Meeting of the Arizona Medical Association at Prescott, Arizona, May 25-30, 1942.

TABLE I

Pathologic Changes of	From Obstruction of the Urethra	From Obstruction of the Bladder	From Obstruction of the Ureter (excluding ureteropelvic)	From Obstruction of the Pelvis (including ureteropelvic)
Urethra	Urethral changes dilatation diverticulum urinary extravasation			
Bladder	Vesical Compensatory Hypertrophy of Detrusor: Trabeculation, Cellules, Diverticulum, Dilatation of Trigonalis: Hypertrophy of the interureteral ridge	Vesical Compensatory Hypertrophy of Detrusor: Trabeculation, Cellules, Diverticulum, Dilatation of Trigonalis: Hypertrophy of the interureteral ridge		
Ureter	Vesical Right and Left Ureteral Hypertrophy Elongation Dilatation Angulation Adherent loops	Vesical Right and Left Ureteral Hypertrophy Elongation Dilatation Angulation Adherent loops	Right or Left Hypertrophy Elongation Dilatation Angulation Adherent loops	
Renal Pelvis	Right and Left Pelvis Hypertrophy Dilatation	Right and Left Pelvis Hypertrophy Dilatation	Right or Left Pelvis Hypertrophy Dilatation	Right or Left Pelvis Hypertrophy Dilatation
Renal Parenchyma	Right and Left Kidney Hydronephrosis (Primary atrophy) Infection Secondary atrophy Pyonephrosis	Right and Left Kidney Hydronephrosis (Primary atrophy) Infection Secondary atrophy Pyonephrosis	Right or Left Kidney Hydronephrosis (Primary atrophy) Infection Secondary atrophy Pyonephrosis	Right or Left Kidney Hydronephrosis (Primary atrophy) Infection Secondary atrophy Pyonephrosis

hydronephrosis on that side. When both ureteral orifices are affected, the bilateral hydronephrosis which develop may be equal or they may show great difference in degree. An obstruction below the neck of the bladder, such as that caused by urethral stricture, produces similar changes; first, of the bladder and secondly, of one or both ureteropyelorenal structures. It is obvious that the exact determination of the primary cause of a hydronephrosis is an important clinical obligation of the surgeon. The location may be calycal, pelvic, ureteropelvic, ureteral, ureterovesical, vesical, vesico-urethral or urethral, and the hydronephrosis may be unilateral or bilateral. In bilateral hydronephroses originating in the upper tract, the condition which causes the obstruction on one side may be entirely different from that causing the obstruction on the other. In obstruction of the lower tract, an obstructive condition of the upper tract may exist coincidentally or may have developed as a result of the block in the lower tract. Sometimes the clinical determination of this point is important because removal of the obstruction in the lower tract alone may fail to bring relief. A stone in the ureter maintains the obstruction or a dilated, elongated and tortuous ureter continues to slow up drainage from the kidney; the ureteral dilatation may have produced a valve-like condition at the ureterovesical juncture which itself becomes a secondary factor of obstruction. A diverticulum developing beside a ureteral orifice can so push aside the ureter as to obstruct it. This secondary factor would persist after removal of the obstruction (median bar) which was the initial cause of the diverticulum, the hydro-ureter and the hydronephrosis. The clinician, therefore, must determine not only the location of the primary obstruction but also the probable existence of coincidental and secondary factors of obstruction which have developed since the onset of the hydronephrosis. Equal in importance with the consideration of the cause and location of the obstruction is determination of the degree of obstruction which exists. It may, for example, be complete, partial, intermittent or temporary. Contrary to the idea previously held, complete obstructions rarely cause primary atrophy. As a rule, hydronephrosis develops in just the same way whether the block of the ureter or ureteropelvic outlet is complete or partial. This difference, of little importance clinically, exists, namely, that the hydronephrosis developing after a partial obstruction may reach much greater dimensions over a longer time than that which follows complete block. Huge hydronephrotic sacs containing many liters (17 or more) have been re-

ported following partial obstruction. It should be remembered also that hydronephrotic atrophy progresses more rapidly in old persons than in young, probably because of the vascular changes occurring with age. The size of a hydronephrosis, therefore, is no safe criterion of the degree of parenchymal atrophy, the main concern of the surgeon. Functional studies alone give reliable information on this point, and when these are not obtainable, the surgeon must rely upon gross pathologic changes.

PRINCIPLES GOVERNING SURGICAL TREATMENT OF HYDRONEPHROSIS

The surgeon has two obligations to fulfill before deciding on any line of treatment.

First, he must determine the cause of the hydronephrosis.

Secondly, he must determine as nearly as possible the functional ability and the reserve of each kidney.

Complete Diagnosis: The various conditions which cause hydronephrosis have been indicated. Most of them are discovered in the course of a routine urological examination. Suppose, because of his patient's complaint of pain or for some other reason, a medical man obtains intravenous urograms which disclose a hydronephrosis. This discovery so simply made is not a sufficient diagnosis. Retrograde pictures which might or might not duplicate the intravenous ones are not always required nor are they always sufficient. Rarely can any of the steps of a routine study be omitted. It is assumed that the reader is familiar with this routine and with the significance of the findings of each part of it. Discusion, therefore, will be omitted.

Renal Counterbalance: The second obligation of the surgeon, determination of renal function and renal reserve, is in need of clarification if the failure of most urologists to grasp its significance is any indication. Quinby's interpretation of the theory of renal counterbalance, "that when one kidney has been crippled by being made hydronephrotic, such a kidney will not resume activity again even if the hydronephrosis is relieved" is typical of this failure.

Let us review briefly the experimental facts upon which the theory of renal counterbalance is based and then restate the theory with a few practical illustrations.

In Table II are summarized the counterbalances reached after resections of different amounts of the renal mass. Such experiments demonstrate the remarkable native reserve power of normal renal tissue and its extraordinary ability to respond to stimulation by the development of hypertrophy. The renal units left intact function more actively and continuously than before and these units, glomeruli and convoluted tubules particularly, in time become hypertrophied under the influence of this increased activity. The compensatory hypertrophy of as little as one-quarter of the original mass may counterbalance the loss of three-quarters of it but the remaining renal tissue will have little reserve power and will prove insufficient if called on for more work.

TABLE II

Experiments on Compensatory Hypertrophy

Experimental Operation	Relative Renal Function Immediately Afterward*		Compensatory Hypertrophy (Counterbalance) Months or Years Later	
	Right	Left	Right	Left
	%	%	%	%
a. Right heminephrectomy	15	30	20	40
b. Right nephrectomy	0	30+	0	60
c. Right nephrectomy and later left hemi-nephrectomy	0	15+ (The native, or functional, reserve will markedly increase this within a day or so, long before compensatory hypertrophy has occurred.)	0	60

*Total renal work, 60%, each normal kidney doing one-half of this, or 30%.

In experimental counter balance renal insufficiency usually follows right nephrectomy and concurrent left hemilnephrectomy. If 2 months or so is allowed for left compensatory hypertrophy, however, before left heminephrectomy is performed, further hypertrophy will occur in the original one-quarter of the renal mass (one-half of the left kidney) so that it will be capable of doing all of the work. (Table I c.)

The second series of experiments (Table III) simulates closely many of the hydronephrotic conditions which require surgery, and the various types of counterbalance which these experiments illustrate also are found in practice.

DISCUSSION

In the foregoing tables are given the average functional readjustments of the remaining portions after the removal or destruction of renal tissue. Equal potentiality, a more or less equal reserve power, is assumed for commensurate portions. For example, heminephrectomy (Table II a) removes 15 per cent of total function (60 per cent). The remaining one-fourth and the

opposite one-half are both stimulated and if each side responds proportionately to the demand for carrying the 15 per cent increase of function, the side having one-fourth, which has now become one-third of the total mass, will eventually perform 20 per cent (15 per cent + one-third of 15 per cent); the other kidney, now forming two-thirds of the mass, will perform 40 per cent (30 per cent + two-thirds of 15 per cent.) Many factors may modify this average. The kidneys may not have been equal in size or in functional reserve. An infantile kidney notably is lacking in reserve power, is working to its full ability and fails when called on for compensatory hypertrophy. Furthermore, the renal mass on one or the other side may have been injured by the surgical procedure or weakened by an antecedent, intercurrent or subsequent infection or other disease. Any of these factors may unbalance the relative responses to stimulation. The more capable side, even though much smaller, then would do relatively more work than the larger, less capable side and in time might entirely replace it. Necessarily, therefore, the average given above presuppose proportionate abilities and reserves of the right and left sides to respond to stimulation. The counterbalance after heminephrectomy as given above, 20 per cent and 40 per cent respectively, is quantitative, but qualitative differences of the opposed forces would greatly modify it. *Stimulation and the relative ability to respond to it are the essence of renal counterbalance.*

If the right ureter is successfully transplanted to the duodenum, the right kidney will show the same degree of compensatory hypertrophy as the left, although it performs no actual excretion since all of its work is nullified by intestinal reabsorption. Hypertrophy occurs in the left kidney as it would after righ nephrectomy.

In Table III are summarized the readjustments to the functional demands after varying amounts of the original renal mass have been destroyed by hydronephrotic atrophy.

TABLE III

EXPERIMENTS UPON HYDRONEPHROTIC REPAIR AFTER RELIEF OF URETERAL OBSTRUCTION

1. Complete obstruction of the right ureter near the bladder with ureterovesical implantation later and subsequent study of the ultimate counterbalance of the right and left sides.

a. The left kidney is not disturbed.

Right Ureteral Obstruction is Removed at the End of:	Relative Function Immediately After Removal of the Ureteral Obstruction		Final Counterbalance* Several Months Later (Permanent Until Disturbed)	
	Right, %	Left, %	Right, %	Left, %
(1) 2 weeks	About 15	About 40†	16†	43†
(2) 3 weeks	7.5	45†	10†	50†
(3) 4 weeks	4.0—	56+	4†, if healthy it may persist	56+

b. Left heminephrectomy (performed at the time or removal of the obstruction of the right ureter).

	Relative Function Immediately		Final Counterbalance of the Right Ureter Months or Years Later	
	Right†, %	Leftz, %	Right, %	Left, %
(4) 2 weeks	15—	20+	25—	35+
(5) 3 weeks	7.5—	22.5+	15+	45+
(6) 4 weeks	4.0	28	8†	52

c. Left heminephrectomy (performed several months after removal of the right ureteral obstruction).

Complete Obstruction Removed at the End of:	Renal Function a Few Days After Removal of the Obstruction		Renal Function a Few Days After Left Hemi-nephrectomy Several Months Later		Final Counterbalance Several Months After Left Hemi-nephrectomy	
	Right, %	Left, %	Right, %	Left, %	Right, %	Left, %
(7) 2 weeks	15 [See (1)]	40†	16 [See (1) final counterbalance]	22† (½ of 43%)	25 (16/38 of 60)	35 (22/38 of 60)
(8) 3 weeks	7.5 [See (2)]	45	10 [See (2) final counterbalance]	25†	17+ (10/35 of 60)	42+ (25/35 of 60)
(9) 4 weeks	4.0 [See (3)]	56+	3 to 4— [See (3)]	28+	7+ 4/32 of 60)	52+ (28/32 of 60)

d. Left nephrectomy (performed at the time of removal of the right ureteral obstruction).

	Renal Function a Few Days After		Final Counterbalance	
	Right, %	Left, %	Right, %	Left, %
(10) 2 weeks	15	0	55 to 60	0
(11) 3 weeks	7.5	0	30 (?)	(most animals die)
(12) 4 weeks	4†	0	Death in from 7 to 10 days	

e. Left nephrectomy several months after removal of the right ureteral obstruction.

	Counterbalance Before Left Nephrectomy		Function Immediately After Nephrectomy		Final Counterbalance	
	Right, %	Left, %	Right, %	Left, %	Right, %	Left, %
(13) 2 weeks	16 [See (1)]	43	30+ Markedly increased in few days	0	60	0
(14) 3 weeks	10 [See (2)]	50	20+ (Most animals survived with renal insufficiency)	0	40 to 50	0
(15) 4 weeks	4 [See (3)]	56	Most animals die in a few days. None regain 60% function			

f. Gradual left autonephrectomy produced by partial obstruction of its ureter (performed at the time of removal of the complete obstruction of the right ureter).

	Relative Function at the Time the Complete Obstruction is Relieved on the Right and a Partial Obstruction is Placed on the Left		Counterbalance from 8 to 12 Months Later, After Complete Hyrdonephrotic Atrophy of the Left Kidney Has Occurred	
	Right, %	Left, %	Right, %	Left, %
(16) 2 weeks	15	40	60	0†
3 weeks	7.5	45	60	0†
4 weeks	4†	56	50 to 60x	0†
6 to 8 weeks	(†)	60	(Death from renal insufficiency	

*It is understood that an intercurrent infection of either kidney has occurred at no time during the experimental period.

†It takes from 4 to 6 weeks for functional compensation, as after nephrectomy, and much longer for complete compensatory hypertrophy in a dog.

zThe left kidney has undergone some compensatory hypertrophy in the two weeks' period.

xProvided left autonephrectomy has been gradual, at least 12 months.

Getting equal stimulation, however, the right kidney also enlarges to the same degree, each performing 60 per cent, or total function. The dog now has the functional ability of four kidneys, 120 per cent. Transplantation of the right ureter to the skin, however, would result in 50 per cent bilateral loss of stimulation provided the forces opposed to each other were equal. In the final counterbalance, each kidney would excrete 30 per cent, or one-half of the total. Unilateral infection or back pressure would offset this result in proportion to the effect of this injury upon functional ability, and the final counterbalance would then be influenced by these qualitative factors. This is the important consideration in the surgical treatment of hydronephrosis. In all of the experiments of Table III the permanent balance of function finally reached between the right and left kidneys was unaffected by infection or hypoplasia. The point most clearly emphasized is the dependence of repair upon stimulation and upon the delivery of this stimulation gradually for the maximum effect.

A kidney injured by two weeks' ureteral obstruction will take over total function efficiently (Table III) after both the obstruction and the opposite kidney are removed, but one injured by longer obstruction (from 3 to 4 weeks) fails when the opposite kidney is removed, and the dog promptly dies of renal insufficiency. If several weeks pass after removal of the obstruction before nephrectomy is performed on the opposite side, thus stimulating repair more gradually, the kidney which has suffered three weeks' hydronephrosis will regain renal sufficiency. If the stimulation is delivered even more gradually by slow destruction of the opposite kidney (by means of partial obstruction of its ureter), the kidney which has the hydronephrosis of four weeks' duration eventually will bear the total burden easily.

A hydronephrotic kidney gets as much less stimulation for repair after removal of its obstruction as is taken up by the compensatory hypertrophy of the opposite undisturbed kidney which has been performing total function for the period of ureteral obstruction. The undisturbed kidney is stimulated in the same manner as a solitary kidney after removal of its opposite kidney. (Table II.) The repair of a hydronephrosis of 2, 3 or 4 weeks' duration, therefore, will not be so great after removal of the obstruction if the compensatory side is undisturbed, as it would be otherwise. The stimulation for repair is much less. Nevertheless, whatever repair occurs is permanent if the kidney suffers no subsequent injury from infection or imperfect drainage. Any injury of such a kind reduces its ability by transferring this additional stimulation for compensatory hypertrophy to the more capable, healthier kidney; such an unrepaired hydronephrosis in time may atrophy or become functionally incompetent.

This then is the theory of renal counterbalance: It is the relative response to the added stimulation brought impartially to each kidney after loss of function by one or both. It is the permanent repair and hypertrophy of the one side as compared to the other in response to this stimulation. It is an anatomical and functional readjustment to the loss of renal tissue on one or both sides, and the final adjustment between the two in the performance of total function occurs in proportion to the opposed number of functional units and their relative ability. There can be no counterbalance without two opposed renal masses (two kidneys) as a beginning. Renal counterbalance is the final division of labor between them. Disturb this adjustment and the process starts all over.*

In the surgical treatment of hydronephrosis the general problem is the choice between a radical or a conservative procedure. The most skillfully performed and technically perfect plastic repair of a unilateral hydronephrosis with a normal compensatory mate is the wrong solution if it fails to put this side in the position of potential ability to carry the total load should it ever become necessary. Clinical experience closely parallels the experimental findings in this respect. Less than one-quarter of the total renal mass will be insufficient. A hydronephrotic kidney which cannot perform 25 per cent of the total function, therefore, is not worth saving. If total function, as measured by phenolsulphonphthalein, is 60 per cent, the repaired hydronephrotic side should perform at least 15 per cent of the function. Under ideal circumstances this limit might be reduced to a borderline of 10 per cent. Any unilateral hydronephrotic kidney with a sound hypertrophic mate which can-

*After 20 years I see no reason to change the conclusions of the surgical significance of the theory of renal counterbalance presented before the American Association of Genito-Urinary Surgeons, (Transactions XV, 241-382, 1922), and The Kansas City Clinical Society. (The Archives of Surgery, 12:1105-1223, June, 1926.)

not excrete from 10 to 15 per cent of the total function should be removed. How can this point be determined? The estimation of relative function after the insertion of ureteral catheters is not always conclusive. There are any number of circumstances and conditions which may render a decision difficult, all of which must be carefully considered before coming to a conclusion. Are the catheters draining each renal pelvis adequately? If so, there will be no leakage around either one into the bladder, and the sum of the two will show a normal output. Is there any inhibition of functional activity on either side during the test? Before such a test patients should have been given fluids freely. Infection may inhibit activity. The too sudden relief of the obstruction may react to reduce the potential ability of the hydronephrotic side. Usually the capability of a hydronephrotic kidney is more nearly established by retaining the catheter a few days and repeating the functional studies, that of the good side transvesically. Retained catheters as a rule are required in the study of bilateral hydronephrosis. Unless inhibited by the foregoing or other conditions, however, a unilateral hydronephrosis will show its full capability on the first test. If the kidney is active and uninfected and draining freely through the catheter, the first test will be as good as any subsequent ones even though the catheter be retained for weeks. This is important An uninfected unilateral hydronephrosis should not be exposed to the very considerable risk of infection which a retention catheter carries. Preferably repeat the ureteral catheterization and study of relative functions. If they coincide, no more information about function is required. Remember that whatever function is shown by an uninfected, uninhibited hydronephrosis at this time is the maximum as long as the opposite kidney remains sound. A hydronephrosis infected to start with is another problem. I have tested repaired hydronephroses twenty years after surgery in patients with one normal kidney, and have found the relative function just about the same as it was at the first ureteral catheterization, no more, no less. The renal counterbalance, or functional readjustment, established by the surgical repair has remained fixed. The following reports illustrate the problem of surgical treatment of unilateral hydronephrosis with a normal compensatory mate.

Case I. A young woman had a large uninfected left hydronephrosis, with a function of from 3 to 4 per cent and a normal hypertrophic right kidney with a function of from 35 to 40 per cent (15 minutes, intravenous phthalein). She was treated for two weeks by the resident urologist of the County Hospital by means of retention catheter to the left kidney, to determine whether or not improvement of function would justify the plastic operation which the pyelogram showed to be quite feasible. There was no improvement of function on the left side although the catheter continued to drain perfectly. A fulminating infection of the left kidney appeared suddenly, and at autopsy a few days later a pure culture of B. Welchii was recovered.

NOTE: The gas bacillus infection, of course, is a very rare complication but this case illustrates the risk of retention catheters and the duty of strict asepsis by those who care for them. In unilateral, uninfected hydronephrosis it is better to repeat the study and not retain the catheter. Surely nephrectomy would have been right for this patient no matter how simple and feasible the repair.

Case II. A big, vigorous, young carpenter appeared in the clinic 10 years ago, complaining of pain in the right side. Urological study showed a moderately large hydronephrosis from ureteropelvic obstruction. Relative function was from 10 to 12 per cent on the right and from 28 to 30 per cent on the left, in 15 minutes. No infection was present. The plastic operation was successful. He was relieved of backache, and subsequent studies showed the foregoing figures to be a fixed functional counterbalance. Hypertension developed, however, two years ago and his family doctor sent him back for study, suspecting that it might be renal. The relative function had remained the same and there was no infection nor evidence of unilateral abnormality. Because of rising blood pressure, headaches and changes in the eyes, nephrectomy was finally decided on. Gross study of the removed kidney showed good repair and microscopically nothing notable was seen other than hypertrophic changes, yet his blood pressure promptly returned to normal and has remained so for eight months.

NOTE: There is every reason to suppose that after its repair this right kidney would have performed total function efficiently had it been called on to do so. What happened in it to cause renal hypertension is a question. Hypertension might never have developed had this kidney been stimulated to greater activity by gradual destruction of the left. On the other hand, this is the only instance within my knowledge in which hypertension followed the surgical repair of a hydronephrosis.

In treating *bilateral hydronephrosis,* hydronephrosis of a solitary kidney or unilateral hydronephrosis with an impaired mate, conservative procedures always are required. A study of the renal shadows and the pyelograms gives valuable information about the relative amount of renal tissue. A thin rim of parenchyma about a large sac does not promise much recovery of function. Nevertheless, stimulated to its utmost by renal insufficiency, a small mass may do an

unbelievable amount of work. Under these circumstances, conservation of every bit of renal tissue is imperative. With a great degree of destruction on one side and only a moderate amount on the other, so moderate that after repair the kidney could perform total function well enough, repair of the better side and opposite nephrectomy is logical. With more or less equal injury necessitating bilateral repair which seldom can be done in one operation, the second stage cannot safely be delayed too long since the side not operated on will be getting less and less stimulation as its mate repairs and thus be losing more and more of its own capacity for repair. In cases of severe renal insufficiency preliminary drainage by retention catheters, or by nephrostomy tubes when catheters cannot be passed or drain imperfectly, is a necessity. During this period studies of relative function together with the x-ray findings will establish a logical plan of attack which sometimes brings about a truly remarkable restoration of renal function. In a patient with advanced hydronephrosis, conservative methods are useless and nephrectomy is indicated. In conditions of bilateral hydronephroses with complete destruction on one side, the problem is similar to the treatment of a unilateral hydronephrosis with the opposite kidney removed and, as a rule, the functioning side should be operated on first. The three reports below illustrate the surgical problem of bilateral hydronephrosis:

Case I. A child of nine had had periodic attacks of abdominal pain with nausea, vomiting and fever, for three years. The urine showed only an occasional pus cell and, except the finding of a large palpable right kidney on physical examination, all the steps of routine examination showed no evidence of urogenital abnormality. This patient was interesting because this one finding was the only thing indicating the need for investigation of the urogenital tract, yet if this study had been delayed for any length of time the opportunity of restoring renal function would have been lost. The urological study showed a functionless right kidney and hydronephrosis developing on the left. A plastic operation was done on the left and the condition of this kidney, six years later, was good. Specimen removed at right nephrectomy showed the uselessness of any attempt at repair on this side.

Case II. This patient had bilateral hydronephrosis. At the first study the left kidney showed a mere trace of phthalein output as compared to 38 per cent output on the right during one-half hour. The plain x-ray film and the pyelogram indicated considerable potential parenchyma on the left and after exposure of the left kidney and its examination, this hope was confirmed and a plastic operation was performed. There was an immediate repair of function; study 3 months later showed 19 per cent on the right and 7 per cent on the left but there was 18 per cent leakage which retrograde pyelograms indicated came mostly from the left. A month later plastic operation was done on the right kidney and subsequent study showed 35 per cent function on the right with 20 per cent on the left.

Case III. A normal looking but nervous woman 50 years of age consulted me in 1921, complaining of frequency, pyuria and night sweats. Eighteen years previously she had had a nephropexy, since which she had suffered from recurrent attacks of cystitis. Her blood pressure was 120/80. The total phthalein output was 12 per cent and the test of relative function showed the appearance time to be 18 minutes on the right and 24 minutes on the left; 6 per cent of function was shown on the right, but only a trace on the left. There was no leakage. Pyelograms showed an advanced degree of bilateral hydronephrosis. The patient was treated by ureteral dilatations and retention ureteral catheters for various periods of several days each. On September 13 the test of relative function showed the appearance time to be 8 minutes on each side, with 22 per cent output on the right and 7 per cent on the left. The total phthalein output had gradually increased so that it remained consistently between 30 and 35 per cent. On October 3 a ureteropyeloplastic operation and nephrostomy were performed on the left. Twelve days later the total phthalein output was 55 per cent and remained so consistently for years. On January 25, 1922, a right ureteropyeloplasty and nephrostomy were done. Following this, the patient got along fairly comfortably though she had continued trouble from the left side and a persistent pyuria. The left kidney gradually lost function and in December, 1928, it was removed. It showed very little functioning tissue. In November, 1932, the total phthalein had dropped to 35 per cent and the blood pressure had begun to rise. In November, 1933, it was 200/100. In February, 1937, the phthalein test was reduced to 30 per cent and on November 3, 1938 the patient suffered a coronary occlusion. A complete autopsy was obtained. The right kidney measured 14 by 5 by 4 centimeters and weighed 230 grams. There was still considerable dilatation of the pelvis and ureter. Microscopic sections of the kidney showed small areas of fibrosis, lymphocyte infiltration and an occasional scarred glomerulus. *The rest of the parenchyma was normal.* The glomeruli were not remarkable and the arterioles were not sclerotic.

NOTE: This patient illustrates the remarkable resistance of renal tissue to prolonged infection and the wonderful hypertrophic repair of which it is capable. The improvement in function

of the left kidney following its repair and its gradual loss of function after repair of the more capable mate illustrates renal counterbalance.

The clinical problem of the treatment of hydronephrosis may be summarized as follows: Differentiation must be made between unilateral and bilateral cases. In a decision as to treatment in either group the important considerations are, first, determination of all causes of obstruction and associated conditions; secondly, determination of the potential reserve of each kidney; thirdly, tentative decision upon the correct procedure of treatment, and fourthly, confirmation of the foregoing decision by careful study of the conditions found at operation.

SURGICAL TREATMENT

The surgical treatment of hydronephrosis will be considered in the order of diagnostic subdivision:

I. Hydrocalycosis
II, Unilateral hydronephrosis
  1. Nephrectomy and ureterectomy
  2. Conservative therapeusis
    a. Ureteropelvic obstruction
    b. Ureteral obstruction
    c. Ureterovesical obstruction
III. Bilateral Hydronephrosis
IV. Hydronephrosis secondary to an obstruction in the lower urinary tract.

I. *Hydrocalycosis.* Occasionally, particularly in cases of renal lithiasis, the major calyx or an infundibular branch becomes obstructed and a hydrocalyx develops in consequence. Hydrocalycosis also arises from other causes, such as chronic infection. Such a dilated calyx may cause the persistence of infection and its resection sometimes is definitely indicated. The surgical problems involved are essentially those of hemisection of a kidney. Care must be taken, however, that all the portion of the renal parenchyma which drains into the dilated calyx is removed with it, otherwise a urinary fistula may persist. I have one patient now with such a fistula which has been draining small amounts of urine for more than two years with little diminution in the amount. This patient has a solitary kidney and has had numerous operations so that another one to close the fistula by further resection of the kidney seems inadvisable. A tube to the kidney is worn and a small bag attached to its end keeps him dry, very much as with a nephrostomy.

II. *Unilateral Hydronephrosis.*

1. *Nephrectomy.* The surgical removal of a hydronephrosis is more workmanlike when done without puncture or tear. If the hydronephrosis is infected, a clean intact removal is especially desirable. To accomplish a dry excision of a large sac requires a long incision and a good exposure. A more open operative field than that obtained by resection of the rib is achieved by forcibly raising the rib after division of the costovertebral ligament; this is practicable only with incisions parallel to the rib. Such an incision has the added advantage that it can be extended out through the abdominal wall, supplying an opening through which even the largest sac can be delivered. The peritoneum is in contact over a large part of the lower portion of a big hydronephrosis and, being thus stretched, is thin and easily torn. It must be freed gently and carefullly for the repair of such peritoneal tears is time-consuming, and even difficult because of this thinness. After delivery a large hydronephrosis must be well supported by the assistant while the surgeon is placing pedicle clamps, as it might tear loose by its own weight.

Drainage of the sac before freeing it, to permit the use of a shorter incision and give easier access to the pedicle, has certain distinct disadvantages in which the question of personal humiliation has no part. Complete removal will be found to be even more difficult than if the hydronephrosis is intact and often very uncertain as well, large portions of the sac sometimes being left behind. Fortunately these remnants rarely give trouble later. The surgeon, then, must balance the difficulties of intact removal against the disadvantages of removal piecemeal, as happens with huge sacs after being torn or drained.

Ureterectomy. Ordinarily in nephrectomy for hydronephrosis it is necessary to remove only as much of the ureter as can be easily reached. If the ureter is doubly ligated and divided, the remnant rarely causes trouble. This is true also of hydro-ureter, but in the presence of this condition it is well to have drained the distal end before ligating the ureter. In the exceptional circumstance of the ureter's being closed off near the bladder so that it will not drain into it, complete ureterectomy may be indicated. Whenever the remaining stump can drain into the bladder, it will rarely cause trouble if left.

2. *Conservative Surgical Therapeusis.* The discussion of urinary antiseptics, ureteral dilatations, abdominal belts for renal ptosis and oth-

er non-surgical methods will be omitted. It will be well briefly to outline here the technical principles generally followed today in the conservative surgical treatment of hydronephrosis:

(1) A proper incision with an adequate exposure so that the kidney can be freely delivered for examination and manipulation, is the first requirement. As mentioned above, an incision which parallels the twelfth rib and extends well toward the back, with division of the costovertebral ligament, gives the best exposure.

(2) All urologists with experience in plastic work are agreed that absorbable, fine catgut sutures are preferable to anything else and are best used with atraumatic or French eye needles. As close an apposition as possible of the sutured parts is striven for, but it is inadvisable to use a double row or more of sutures to obtain this. Better results are achieved by one row of sutures properly placed.

(3) Almost all plastic operations should be accompanied with adequate urinary drainage for the period required for healing. Nephrostomy has many advantages over pyelostomy or ureterostomy. This type of drainage, if performed properly, is direct and the tubes can be removed, cleaned and replaced at will. The disadvantage of a pyelostomy drain is that, once removed, it can rarely if ever be replaced. The technic of nephrostomy is important in that the tube should drain through one of the major calyces at the thin portion of the renal parenchyma, thus producing the least destruction of renal tissue. To place it properly, an instrument of some kind must be passed retrograde from the pelvis through this calyx so as to draw the nephrostomy tube directly into the pelvis. The tube which has been inserted from the outside and dissects outside the calycal or pelvic mucosa, is not only worthless but an actual menace.

(4) The field of the plastic operation should have some internal splint retained for the period of healing. The most practical way of applying this splint is to insert it through the nephrostomy tube so that it passes several centimeters down the ureter. A number 8 to 14 urethral catheter of soft rubber is much to be preferred to the stiff ureteral variety. Furthermore, a drain of this kind should have an opening at the pelvic level so that the pelvic contents can discharge through it in either direction. This offers the advantage of permitting through and through irrigations of the pelvis to combat or prevent infection. This tube should not be withdrawn until it seems fairly certain that the plastic operation is thoroughly healed. Such a tube is retained, as a rule, from one to two weeks, or by some as long as three months, and the time for removal can be judged by the absence of leakage of urine through the rubber tube drain that has been placed behind the kidney down to the pelvis.

(5) It is usually well to fix the kidney in the proper postion before closing the incision, which can be done with a mattress suture of chromic catgut alongside the nephrostomy drain into the wall of the incision at the proper place. This insures not only good drainage through the nephrostomy but easy and safe replacement of the tube when necessary.

(6) After completion of the operation, before closure of the incision, a rubber tube with a number of perforations should be placed posterior to the kidney well down to the level of the ureteropelvic plastic operation. As a rule it is well also to place a wick drain beside it. This drain can be removed within twenty-four hours, but the rubber tube should remain and be replaced as necessary until after the nephrostomy tube has been removed. As a rule, it will be found practicable to have the drains come out at the lower end of the lumbar incision and the nephrostomy tube several inches above this, the muscles being closed at both sides of the nephrostomy drain. If the rubber drain and the nephrostomy drain are brought out alongside each other, subsequent attempts to replace the nephrostomy tube may meet the difficulty that it follows he track of the rubber tube instead of entering the kidney.

a. *The Surgical Treatment of Hydronephrosis Caused by a Ureteropelvic Obstruction.* Hydronephroses of this group are of two main types; in one there is constriction at the ureteropelvic juncture, in the other there is high insertion of the ureter into the renal pelvis, giving a valve-like obstruction. It is not always possible to determine the type by urological study. Upon determination of the existing condition after surgical exposure, the previous diagnostic findings should be reconsidered in connection with the situation found at operation. Can the obstruction be relieved without undue risk? Does the appearance of the kidney justify the belief that it alone could sustain life afterward? Satisfied in the affirmative, the surgeon must choose

the one of a number of different technical methods which seems best for this particular job. The methods most in use are:

(1) Simple division of an aberrant blood vessel, an obstructing band or adhesions at the ureteropelvic juncture is often found to be all that is required for the relief of the earlier degrees of hydronephrosis.

(2) The procedure next in simplicity is a longitudinal incision over the constricted ureteropelvic juncture with transverse closure by the Heinecke-Mikulicz technique.

(3) Schweizer first modified the Heinecke-Mikulicz procedure by making a Y incision, the arms of which extended into the pelvis.

(4) Foley later made an ingenious modification of the Schweizer Y incision, placing it posteriorly and extending one arm.

(5) A fifth method is lateral anastomosis after the method of Finney's pyloroplasty, a ureteropyeloneostomy, by which the opening between the ureter and the pelvis is widened. Any number of different modifications of this principle have been presented.

(6) Reimplantation of the ureter into the dependent portion of the dilated pelvis is often required. This was first done by Kuster as early as 1892.

The three procedures listed below have been used alone or with one of the foregoing:

(7) Resection of the redundant pelvis.

(8) Plication of the renal pelvis.

(9) Nephropexy.

So varied are the attendant circumstances that to obtain a true picture of the results of these conservative operations is difficult. In Dick's series of 60 cases there were 34 nephrectomies and 26 conservative operations. Of the 26 conservative operations the results of the 6 with division of aberrant vessels were good; in 10 reimplantations there were 3 failures; in 8 cases (of the 26) the hydronephrotic atrophy subsequently progressed; and two patients had reimplantation of a hydro-ureter into the bladder with good results. Thirty-nine of Riche's 54 patients were cured. There were no deaths in the group but 5 (or 9 per cent) required subsequent nephrectomy. In the 31 major plastic operations, 30 per cent of the patients showed a poor result. In Von Lichtenberg's 47 cases, secondary nephrectomy was required in 7 per cent and in Walters' 71 cases secondary nephrectomy was performed in 21 per cent. Of the remaining 46 patients, 71 per cent were benefitted.

b. *The Surgical Treatment of Hydronephrosis Caused by Ureteral Obstruction.* The commoner abnormalities of the ureter which cause obstruction of the urine flowing through it and which may occur at any level from the pelvis to the bladder are stone, stricture, surgical injury or ligation, kinks, extrarenal compression, and atony, either infectious, neurogenic or congenital (megalo-ureter).

The surgical problem of the ureteral stone which has led to the development of hydronephrosis is, early in the disease, simply the removal of the stone. When the hydronephrosis has become advanced, however, the problem is the same as that in unilateral hydronephrosis requiring nephrectomy, discussed above.

Many strictures of the ureter can be successfully dilated but for those that follow surgical injury or ligation ureteral re-anastomosis is often indicated, or, if this is not possble, the transplantation of the ureter to the other ureter, to the skin, or to the lower intestinal tract as a means of saving the kidney must be balanced against the advisability of doing a direct nephrostomy, which would need to be made permanent. Kinks of the ureter can either be straightened or a portion of this part of the ureter resected. Straightening of a localized kink usually is sufficient, but when the ureter has become markedly tortuous and elongated as well as dilated, simple straightening of the ureter, in itself a considerable surgical problem, will not secure good drainage. In 1929, I reported the results of partial resections of such tortuous ureters in a number of boys with posterior urethral valves. As evidence of the progress urological knowledge has made, none of these advanced obstructive ureterorenal conditions has been encountered in the last ten years.

Neurogenic disturbance of the ureter by interference with peristalsis and consequent stasis of urine sometimes leads to pelvic dilatation and, more commonly, infection. How often this ureteral affection occurs with spinal cord bladders and is itself a factor in the incidence of renal infection so frequent in these conditions is a cause for speculation. A brief report illustrates this point: Three years previously the patient had had a radical resection of the rectum for early cancer, following which he had urinary retention and had to have catheterization or a

retention catheter. Gradually he acquired the ability of emptying the bladder almost completely by straining with the abdominal muscles in the standing position, but there was always a residual of some 100 to 150 c.c., necessitating periodic catheterization daily in order to keep down infection. In spite of this routine, it soon became apparent that he was gradually losing renal function; phthalein tests showed this to be reduced to 5 or 10 per cent and the blood urea was rising. Complete urological study showed bilateral ureteral dilatation and hydronephrosis. Ureteral retention catheters brought the function promptly back to normal, but it was impossible to retain them satisfactorily and after their use severe infection ensued, for which bilateral nephrostomy was done. These nephrostomy tubes worked satisfactorily, and the renal function again returned to normal. Some months later metastases developed and death from carcinomatosis occurred promptly.

There is considerable doubt in the minds of most urologists as to the propery treatment of megalo-ureter which as a rule in unilateral. The two reports given illustrate the general methods which are followed:

Case I is that of a young married woman who had repeated attacks of urinary sepsis accompanied with pain in the side. Complete study showed a megalo-ureter with a fairly normal looking and functioning kidney above. Repeated ureteral dilatations, pelvic lavage, vaccines, etc., controlled the infection and relieved the pain and for 15 years this patient has been in comparative comfort.

Case II is that of another young married woman with an exactly similar complaint but the urological study showed an atrophic kidney above the dilated ureter with a function of only 6 per cent as compared to 35 per cent on the good side. Repetition of this study confirmed it and nephrectomy was advised. In hydro-ureters of this kind it is not necessary to perform complete ureterectomy.

In this connection, should be mentioned the surgical treatment of *hydronephrosis of the upper or lower half of a double kidney.* In these cases pain and infection may be persistent. The problem is very similar to that in hydrocalycosis, and resection of the hydronephrotic portion of the kidney with its dilated ureter is the treatment best suited to relieve it.

c. *The Surgical Treatment of Hydronephrosis Caused by Ureterovesical Obstruction.* A stone caught in the intramural portion of the ureter is the most common cause in this group and, as a rule, removal of the stone relieves the obstructive changes above. Inflammatory stricture is another cause of obstruction often seen, and persistent dilatations frequently relieve this. Ureterocele is a third common cause of obstruction and generally the fulguration or slitting of the cyst will relieve it. Abnormality of the bladder adjacent to the ureteral orifice is a fourth cause of ureteral obstruction at this point. Such conditions as diverticulum, tumor or vesical inflammation may cause obstruction. Extensive tuberculosis of the bladder is one of the commonest forms of inflammation causing ureteral obstruction and in these patients it is often advisable to treat the hydro-ureter and hydronephrosis as a problem distinct and separate from the urogenital tuberculosis. In many instances this condition is found in a non-tuberculosis kidney after its mate has been removed for tuberculosis. Failure of the bladder to heal and continuation of the vesical tuberculosis causes obstruction of the good ureter and development of hydronephrosis sometimes to the point of renal insufficiency. As a rule the first procedure indicated in these cases is nephrostomy. Many of the patients prefer to continue to live with a nephrostomy than to submit to further surgery, such as transplantation of the lower ureter into the bowel or to the skin.

For stricture, ureterocele and valve-like obstruction at the ureterovesical juncture, the suggested surgery of Hess might be indicated.

III. *Bilateral Hydronephrosis.* The clinical problem of bilateral hydronephrosis has been covered in the foregoing discussion of diagnosis and renal counterbalance. Conservation of renal tissue is the foremost consideration. The surgical treatment will not differ from the procedures given above for unilateral hydronephrosis.

IV. *Hydronephrosis Secondary to an Obstruction in the Lower Urinary Tract.* Removal of the obstruction is the first urological problem. The restoration of the ability to void freely and completely is the result to be desired. When such a result is obtained only in part, the hydro-ureter and hydronephrosis, whether unilateral or bilateral, progress. The problem then becomes a double one. Further attempts to remove the obstruction of the lower

tract more completely and to direct treatment of the upper tract by means similar to the procedure given above become major problems to be considered. If the condition is unilateral, the choice lies between nephrectomy or conservation, if bilateral, conservation in the safest and surest way.

University of California.

REFERENCES

Dix, Victor: (Duscission of Riches: Proc. Roy. Soc. Med., 33:1668, 1939.)

Foley, F. E. B.: A new plastic operation for stricture at the uretero-pelvic junction. Report of 20 operations. J. Urol., 38:643-672, 1937.

Gibson, T. E.: Hydronephrosis: standardization of surgical treatment. New England J. Med., 222:910-917, 1940

Hess, Elmer: Intracystic reimplantation of the ureter. A new operative technique. J. Urol., 46:866-872, November, 1941.

Kelly, H. A., and Burnam, C. F.: Diseases of the kidneys, ureters and bladder. D. Appleton & Co., New York, pp. 553, 555, 557, Vol. I, 1914.

Kuster: Ein Fall von Resection des Ureter. Arch. f. klin. Chir., 44:850-854, 1892.

McIver, R. B.: Plastic surgery of the renal pelvis. J. Urol., 42:1069-1083, 1939.

Neuswanger, C. H.: New and old principles in the transplantation of the ureter. J. Urol., 46:885-888, 1941.

Priestley, J. T.: The conservative surgical treatment of non-calculous hydronephrosis. Surg., Gyn. & Obst., 68:832-841, April, 1939.

Quinby, W. C.: Factors influencing the operative procedure in hydronephrosis. J.A.M.A., 93:1709-1710, 1929.

Riches, E. W.: Discussion on late results of conservative treatment of hydronephrosis. Proc. Roy. Soc. Med., 32:1657-1668, 1939.

Von Lichtenberg: (Quoted by Riches.)

Walters, Waltman, and Braasch, Wm. F.: Urinary obstruction and hydronephrosis. J.A.M.A., 93:1710-1715, 1929.

Walters, Waltman: The conservative treatment of hydronephrosis by resections of the renal pelvis and other plastic operations. J. Urol., 29:121-134, 1933.

Walters, Cabot and Priestley: Operative results in non-calculus hydronephrosis. Results in 71 plastic operations. J. Urol., 38:688-693, 1937.

Surgery of the Thyroid Gland

HARRY A. BARNES, M. D.
Flagstaff, Arizona

PRESENT day surgery of the thyroid gland has been constructed on a foundation of knowledge gained by innumerable investigators in this and related fields, and an attainment of a broad view of its problems and achievements is well nigh impossible without at least an acquaintance with the principal steps of its development. The idea of this vital need is aptly expressed by Royster, who said, "Unless he knows something of what has gone before him, he knows very little of what is going on around him, he knows very little of what is going on around him, and can hardly visualize what may come to him."

With these few introductory remarks let us take a look backward over the road that has been traveled to arrive at our present state of knowledge. The very first record of anything pertaining to the thyroid gland dates back to a collection of Hindu religious practices written in India sometime before 1500 B. C. It contains an incantation to be recited by the priests of Buddha for the cure of goitrous patients. Another early reference dates back to 1600 B. C. in China where burnt sponges, and seaweed are supposed to have been utilized for the cure of goitre, the first empirical use of an iodine-containing substance.

The very first reference to surgery of the thyroid gland dates to 1550 B. C. in Egyptian medicine. In Eber's Papyrus it was written, "If thou findest in the patient's throat a fatty growth which resembles an abscess, but which yields to the peculiar sensation of softness under pressure of the finger, say to thyself I will treat this disease with the knife paying particular heed to the vessels."

Independent of Eastern civilization reference to the value of seaweed in goitre is mentioned in Chile. For centuries the inhabitants of South America have chewed the stems of seaweed under the name of "Palo-coto" which means goitre stick.

Pliny in the first century A. D. observed that only men and swine were subject to swellings of the throat which are mostly caused by the noxious quality of the water they drank.

Galen in the second century A. D. had a relatively clear conception of the thyroid gland, and was the first to attribute any function to it. Some of his anatomical observations were made on gladiators wounded in battle. Of the thyroid, he said, "The glands in the neck are of a spongy nature, and from them a humour oozes out, and trickles down, there being no necessity for ducts, which the other glands need, whereby the fluid may be carried." This is indeed one of the most remarkable observations of all time in view of the almost negligible knowledge of the anatomy of the gland which was possessed before Galen. This conception stood until the 16th century.

A very important recent discovery was unearthed in Chapter 33 of the Bamberg Surgery. The paragraph on goiter is copied directly from the "Pantequi" of the great translator Constantine, which is turn is a translation of "The Royal Book" written by Ali Abbas, a Persian

court physician, who died in 994 A. D., and who summarized the whole medical literature of the Moslems. The operation described by Ali Abbas is as follows: "For goiter in which such medication (seaweed and burnt sponges" is of no avail, surgery is necessary." "The skin is cut lengthwise, and the tumor is withdrawn with all the material adherent to it." If you wish to be certain of this you may cauterize with a large iron, the whole interior of the cavity from which you have extracted the goiter." Care should be taken that the pulse or the nerves are not injured in surgery of this kind. If, however, such an accident occurs, you should suture or ligate at each side of the wound. After ligation the gland is seared, and whatever forms in the (hematoma?) is broken. If you do not wish to cauterize when the tumor is removed search diligently to make sure that nothing remains, for if anything remains it will form as before. When the region has been completely cleaned out, it is partly sutured, and red powder is applied. A cloth is placed on the wound and the treatment proceeds but without poultice."

It is not uncommon after unearthing all the aforesaid work for the anatomists and artists to impart the idea of beauty, to goiter, and because of its beauty a goiter operation was seldom necessary. This idea prevailed in the Austrian Tyrol and some parts of Switzerland until the middle of the 18th century.

Up to this time no one spoke very much of the physiology as we know it today. Suyon, who based his ideas on pregnant women, spoke of the thyroid as a blood flow regulator necessary during parturition.

In 1746 Albrecht von Haller gave a final and complete description of the thyroid gland in which he made the first description of the thyroid-ima artery. By 1750 the macroscopic anatomy of the gland was completed. Among the many theories proposed to explain the cause of goiter, the most generally accepted from earliest timse was that it was caused by the drinking of water. Pliny in the first century believed this. The first recognition of the *element iodine* was made by Courtois in 1812 when he came upon the element accidentally while heating seaweed. Coindet ingeniously concluded that this element must be the active principle in all the substances, which had been used as goiter remedies.

His first publication appeared in 1820 in which he administered 5-20 drops of a tincture of iodine tid. He reported excellent results. By 1850 several communities, as that of Savoy, were giving iodine tablets to the school children, and were using the substance as powder in food, or in the form of inunction, or as "iodine neckties" worn during the night. Even at this time the dangers from the indiscriminate use of iodine were recognized and the practice was either abandoned, or modified until revived by Marine and Kimball for the prevention of goiter in 1917, and by Plummer for the treatment of toxic goiter in 1924.

The realization that the active agent of the normally functioning thyroid might be rich in iodine, Kendall isolated thyroxin in 1919, Harrington and Barger in 1926 discovered di-iodothyroxine as an intermediate in the biological synthesis of thyroxine, and in the same year succeeded in synthetically producing thyroxin[1].

The most rapid studies in the surgical treatment of goiter were made after the principles of Lister were put into practice by the Swiss, Germans, and Austrians, (1875-77) notably Billroth and Kocher. After the elimination of sepsis as the most important causal factor of mortality, a relatively safe operative technic precluded an extension of indications for goiter, namely cosmetic reasons. In 1877 Billroth operated for cosmetic reasons, and by 1884 Kocher reported a mortality rate in 250 cases of only 2.4%. Early goiter operations were considered hazardous because of poor antiseptics and supervening "cachexia strumaprevia."

Kocher upon reexamination of his operated cases noted that some presented "cretinoid" symptoms, and hence the term "cachexia strumaprevia" or "thyreoprevia." Kocher then did only lobectomies. Mickulicz in 1886 devised a means hereby both lobes could be resected but a portion of gland in the vicinity of the inferior thyroid artery be preserved to prevent the untoward consequences seen by Kocher. Thus the way was paved for the standardized operation of today.

The American acceptance of antisepsis being late (1890) had up to the present made no important contributions to the knowledge of goiter, or its treatment. Drs. Halsted, Mayo, and Crile, were conversant with the European men and knew of the hazards as the result of technical mishap[2].

The Americans improved the operation to make it relatively safe. Dr. C. H. Mayo performed his first operation for goiter on Dec. 13, 1899, and had completed his 5,000th goiter opperation by 1918.

With a perfected technic it became increasingly more apparent that technic alone in extirpation of the gland did not cure hyperthyroidism. After a successful thyroidectomy, there usually stared in the doctor's face the acute post-operative crises with fever, tachycardia, profound restlessness, vomiting, prostration and coma. Obviously the post-operative reactions had to be controlled before the treatment of toxic goiter could be placed on a solid foundation. Accordingly as methods were devised for the control of post-operative hyperthyroid crises, three periods were developed in modern thyroid surgery, namely: (1) ligation followed by multiple stage and partial thyroidectomy; (2) period of trial and error, without the employment of preliminary measures to reduce the intensity of hyperthyroidism. Operative mortality as expected would depend upon the severity of the cases accepted for surgery. Mortality rates in different clinics averaged 6-10%. (3) The iodine era, when Plummer showed the value of iodine in preoperative preparation of patients with goiter. Mayo then reduced his mortality to 3%. Individuals now had goiters resected before severe hepatic and cardiac damage had taken place.

The revolutionary character of the changes following iodine administration both preoperative and post-operative has changed the attitude of the surgeon and the laity toward operation. In the preiodine period the surgeon nearly always was beset with the fear that in every case there might supervene an unexpected severe post-operative reaction, which he was at best powerless to control. But today after adequate preoperative preparation of the patient, the surgeon has every reason to believe that in all but a small group of complicated cases the patient will easily endure a primary subtotal thyroidectomy, provided that it is done expeditiously and without technical mishap.

ANATOMY

The surgery of the thyroid gland cannot be considered without a brief review of the anatomy. The thyroid is an unpaired gland situated in the neck opposite 2d, 3d, 4th and sometimes the 5th and occasionally the first tracheal cartilages. It consists of a right and left lobe united by an ithmus. The lobes are approximately cone-shaped, and have two blunt poles, a superior, and an inferior one. Occasionally a pyramidal lobe is found and is most commonly situated to the left of the midline.

On the antero-lateral surface the thyroid gland is convex; on the medial side it is concave, and surrounds the larynx, trachea, and esophagous as a horseshoe. The gland is invested by a fibrous internal capsule which is continuous with the middle cervical fascia and the fascia of the trachea, and larnyx to which it is bound. The external capsule is made up of the middle cervical fascia, which is continuous with the carotid sheath laterally, and below with the pericardium. Between the external and internal capsules posteriorily lie the parathyroid bodies, and recurrent laryngeal nerves. Immediately overlying the fascial covering of the gland are the sternothyroid muscles. The sternothyroid muscles overlie the sternothyroid and are situated more to the midline, and both of these are encircled by the middle cervical fascia. The medial portion of the upper pole is covered by the superior belly of the omohyoid muscles. Laterally lie the two stermomastoid muscles which in the normal gland cover almost completely the lateral lobes. Superficially there is encountered the superficial fascia, platysma, and the skin.

The blood supply is derived from the superior, and inferior thyroid arteries, and in about 10% of the glands from the thyroidima. The superior thyroid artery is the first branch of the external carotid, and divides into three branches, one to the isthmus, a smaller to the gland along the postero-lateral surface of the gland where it anastomoses with the inferior thyroid artery of the same side, and a small vessel supplying the superior thyroid body. The inferior thyroid arteries arise from the thyro-cervical trunk (a branch of the subclavian) and pass behind and close to the carotid sheath under the common carotid artery. Within the gland the inferior thyroid artery divides into an anterior and posterior branch, anastomosing with branches of the superior thyroid artery.

The lymphatics consist of a rich anastomotic plexus on the gland that traverse the inter, and intra-lobular connective tissue septa following mainly the blood vessels reaching eventually

the histological unit of the thyroid, namely the follicle.

The nerve supply is largely sympathetic derived from the superior, middle, and inferior cervical sympathetic ganglia accompanying the superior, and inferior thyroid arteries. From the perivascular plexuses, nerve fibers interlace in the connective tissue of the gland surrounding the follicles ending as knob-like structures in each epithelial cell. In this regard it might be stated that Cannon observed several years ago that severance of the sympathetic trunk high in the neck was followed by hemiatrophy of the gland on the side, and by a demonstrable decrease in iodine content of the gland[3].

The physiology of the thyroid gland in the light of our present knowledge concludes that (1) it is necessary for life and the development of the body; (2) it also regulates the rate of oxidative processes in the body; (3) it is effective in controlling differential growth.

THYROID DISEASES

The diseases of the thyroid gland represent a wide diverse range of disturbances illy defined from the normal, and from each other. With respect to the surgery of the gland each case is, and must be considered as an entity at the time of operation. On such a basis alone, can one attempt any form of classification of of a disease process which in its widest sense is only a portrayal of certain phases of the same disease in their unphysiological responses to the stresses and strains placed upon the human organism either by hereditary or the immediate environment. For the sake of clarity and simplification, and in harmony with the American Goiter Association, a workable classification is tenable, as follows:

I. Non-toxic diffuse
II. Non-toxic Nodular
III. Toxic-nodular
IV. Toxic-diffuse (Graves' disease)

The first three represent degenerative state, and as evidence of toxicity develops, there is recognized atoxicity of degeneration in which the entire gland is taking part. These changes are associated with certain variations and substages, particularly terminal, which may be called degenerative or cordio-toxic. The cardiotoxic, to use the words of Hertzler, should naturally follow the first three stages as a natural sequence. The diffuse toxic (Graves' disease) represents a totally different pathological process, characterized by extreme hyperplasia, the toxicity evidently due to this evident excess glandular activity. Therefore there are two great groups, the first three members in the group representing the toxicity of the degeneration, and the fourth group a toxicity of proliferation, which lesds itself to speculative and investigative theorizing.

The fundamental fact of interest to the surgeon is the nature of the goitrous disease. To paraphrase—"Is the noise due to a player piano gone wrong or is it the result of a poor pianist playing on a good instrument? If the former, a good mechanic (surgeon) may hope to restore harmony, and if the latter, he is helpless." In the present day concept, he is both a good mechanic and helpless, and because of this duality many a notable controversial question develop.

As knowledge about the physiology and abnormal physiology of the thyroid accrues it is becoming more evident that hyperthyroidism is apluriglandular disease. The fact that women are more frequently affected in the ratio of 6 or 8:1 hints at the importance which the ovaries and anterior pituitary have in the causation of thyroid disease. The significant part played by the adrenal medulla, the Islands or Langerhans, the thymus, and the liver is brought about by the peculiar correlation which is found in Graves' disease. It is known and accepted physiologically that the thyroid hypertrophies and functions abnormally during pregnancy. The anterior pituitary has a thyroitropic hormone and an overabundance of this must have a definite relation to hyperthyroidism. The role of the adrenal medulla which whips the sympathetic system to increased activity not only causes the thyroid gland to secrete excessively, but also keys the entire body to a heightened state of functioning.

The role of the liver in hyperthyroidism is important because of its intimate relationship to detoxification and sugar balance. Kugelman concluded the liver fails to store glycogen, and that large amounts of stored levulose cannot be converted to glucose, a process easily accomplished by normal liver. Crile and his coworkers are convinced that hyperthyroidism is not basically caused by an overactivity of the thyroid gland itself, but that the over-activity is induced by the stimulation of the sympathetic

nervous system controlled by the adrenal medulla, which in turn is the result of high emotional stress under which we live. He seems to prove his point when he says that if hyperthyroidism were caused by dysfunction of the thyroid itself, or a change in the iodine molecule, or by dietary changes denervation of the adrenal could not convert a hyperplastic thyroid into a thyroid goiter, and could not dispell the symptoms of Graves' disease. But, denervation can do this.

There is little doubt in the minds of observers that simple diffuse goiter can be made smaller by the long continued use of iodine for periods as long as one or two years under supervision. These goiters are removed for mechanical and cosmetic reasons, and not for toxicity.

In non-toxic nodular goiter it is well to exercise care in the administration of the iodine. It has been noted as early as Kocher's time that excesses of iodine precipitated toxicity. This is a moot question today—Means of Boston stating that he has never seen a non-toxic nodular goiter become toxic from the administration of iodine. The indications for surgery in these cases are are follows:

(1) Pressure

(2) Cosmetic reasons

(3) Prophylaxis against neoplasm, the latter remark being severely criticized by the internists.

In toxic nodular goiter surgery is indicated, unless for other reasons. The ideas of Boothby and Plummer relative to patients with toxio nodular goiter not responding to iodine are no longer tenable. Most surgeons give iodine both pre-operatively and post-operatively. Fully fifty per cent respond. In view of the large number of goiters removed today this is considered good practice.

Dr. Blanck, writing on pre-operative iodine therapy in hyperthyroidism, reviews 200 cases of exophthalmic goiter and toxic nodular goiter, the object being to study the comparative lowering of the B. M. R., slowing of the pulse, and increase of weight in each type of hyperplastic. An almost parallel response was noted in the lowering of the B. M. R. and pulse rates. The average increase of the weight curves also showed a very similar response, but the parallelism was not so marked as in the declivity of the B. M. R. and pulse rates. In each type cases were noted in which the administration of iodine did not effect a depression of the B. M. R., lower the pulse, or result in an increase in weight. Hypothetically it is assumed from these studies that the factors operative in producing hyperthyroidism are the same in both the primary exophthalmic goiter, and secondary adenomatous goiter[7].

SURGICAL ASPECTS

A few words about the optimum time to do surgery and when to leave patients alone. Surgery is indicated at the time the B. M. R. has either reached normal or approximated its lowest level, or at the time (early) when the B. M. R. has tendency to rise to its former height. The best response to iodine is at three weeks. Rare, exceptional cases reach a normal B. M. R. and remain normal on iodine. When the hyperthyroidism is stubborn and profound, and iodine does not do any good, put the patient to bed for one month.

In exophthalmic goiter the natural history of the disease is of value in deciding therapy. Clinical experience bears out that there is (1) the acute fulminating hyperthyroidism that goes on to a rapid demise without recognition in some cases, and despite what therapy is employed, (2) the type that runs its course, becomes spent, and reverts to the myxedematous stage of hypothyroidism, (3) those cases that present a hyper- and a hypo-thyroid syndrome but with an elevated B. M. R., (4) cases with spontaneous remission. In Graves' disease the highest B. M. R. is found, and on that basis attempts have been made to evaluate therapy. Those cases in which the B. M. R. is 70 plus, iodine prel and post-operatively with subtotal resection of the gland offers the best hope of cure. Those cases with B. M. R. between (35-70) iodine, surgery and radiation offer the best chances of eradication of the disease. The choice of surgery lies in the intermediate group whose B. M. R. ranges between 35 and 70, for it is this group that can be brought to levels of comparatively safe operability with iodine. With a B. M. R. of 70 or above caution is the key word, and radiation is favored by some men. Surgery may be the swiftest and most economical treatment, but is by no means the last word. The economic status of the average patient decrees in a sense the type of treatment to be given. Surgery takes three weeks, radiation three months plus, and others means, an indefinite length of time.

In the actual surgery of the gland, the question of how much gland to resect constitutes the prevailing weakness of the surgical approach. However, it is conceded good judgment to remove practically all of the gland in those cases with a high metabolic rate, and in severely toxic cases. In these cases post-operative crises are in inverse proportion to the amount of gland removed at operation. Spontaneous myxedema induced by total thyroidectomy is more easily controlled than hyperthyroid crises. Thus we see that the operability of goiter is a vexing problem calling for the exercise of the greatest care and clinical judgment based on a knowledge of the response to iodine, recognition of the type of goiter, and the economic status of the patient[6].

J. L. DeCourcy, writing in the Archives of Surgery, states that sudden deaths still occur on the table. In his series of 8,000 thyroidectomies he has had five such deaths. Confining his remarks to the use of iodine pre- and post-operatively he states that those cases which attempts have been made to bring about a cure of hyperthyroidism with iodine alone are the more hazardous to undertake when surgery is finally decided upon, because these cases become "iodine fast" and do not receive the temporary improvement seen where no previous iodine had been administered[8].

Sir Geoffrey Keynes, writing on the surgical treatment of toxic goiter[9], believes that the development of a precise expeditious technic plus a choice of anesthetic agents has made the operation of thyroidectomy a more safe procedure in combination with sensible iodinization. His preference is for some form of basilar narcosis with avertin followed by infiltration anesthesia, with ½% novocaine. Paraldehyde and pentobarbital sodium are popular as adjuvants to local anesthesia.

Practical thyroid surgery, all other things being equal, depends upon the following for its good results:

(1) Operation should be drastic. Hemi-thyroidectomy has an excellent immediate result, but the patient will always suffer a relapse later. In all cases, except the milder types of disease, at least 9/10ths of the gland should be removed. This applies to the primary toxic goiter in which the gland is very active and able to regenerate. The secondarily toxic goiter, usually nodular, is not so active in proportion to the bulk of the gland, thus more can be left behind.

(2) Those parts of the gland that are to be left behind should be chosen from the posterior borders of each lobe in such a manner that the recurrent laryngeal nerves and the lower parathyroid bodies are left undisturbed. The whole of the isthmus should be removed, leaving the trachea exposed, otherwise an unsightly lump is likely to be visible afterwards in the middle of the neck.

(3) The operator must never approach the operation with the fixed idea of completing the operation at one sitting. The interruption of a thyroidectomy when only one side has been done is life saving. Appreciation of this one point relieves the surgeon that he must proceed with extreme speed, sacrificing safety. If the right kind of anesthesia is used, speed is not so likely to be an important consideration.

(4) "Operation in stages" ligature followed by hemi-thyroidectomy and later by the final stage is becoming more rare. Ligation is reserved for such patients in which even hemi-thyroidectomy would be dangerous because of the extreme illness. The recognition of the case for preliminary ligation will often convert a highly dangerous operation into a reasonably safe one even though the thyroidectomy will subsequently have to be done in two stages.

(5) Cosmetic affects are best obtained by the low collar incision with lateral drainage from the extremities of the wound with no undermining of the lower flap.

E. Runzi of Vienna stresses the need for preliminary X-ray and laryngoscopic examination. By the former an unexpected substernal or migrating goiter can be found; a lateral view may show compression by a hidden posterior nodule. It shows as well as the state of the tracheal wall, calcification of some nodules, and the fixity of the goiter, and enables useful exploration of the anterior and posterior dediastina. Direct laryngoscopy permits the state of the mucosa of the larynx to be verified, and further to detect recurrent paralysis, or the presence of a nodule in the trachea[10, 11].

Purely statistical studies on the result of operations on the thyroid glands are numerous, and these statistics vary greatly in clinics both as a result of the type of case seen and of the geographic situation in respect to the

goiter belts. In the analysis that follows we accept for study the statistics presented for the most common types of thyroid disease[12].

Simple endemic goiter, and simple adenoma meet the surgeon where the consideration is primarily the removal of a large mass of tissue, which by compression of the trachea and great vessels causes dyspnea, choking, and smothering sensations. The huge endemic goiter commonly observed in goitrous regions usually displaces the neck muscles outwards and expands its growth energy in this direction, such that there are relatively few symptoms of compression. Nodular goiters, though of a smaller size, may, on the other hand, produce serious obstruction of respiration, or of the veins of the neck, by growth inward against the trachea or downward into the thorax. Substernal goiter, which is the most dangerous in this respect, nearly always is the result of downward growth of a normally situated thyroid, and is sometimes believed to be an enlargement of a true ectopic mediastinal gland.

In the series of 8,000 cases operated at the Cleveland Clinic, preoperative paralysis of a laryngeal nerve was found in .01 per cent of the cases. Malignancy showed in 2 per cent of all goiters removed at operation. A preoperative diagnosis of the malignancy of the thyroid is made on only 50 per cent of the cases. Therefore, in 1 per cent of all patients subjected to thyroidectomy, malignancy is present, though unsuspected before operation. In addition, since about 50 per cent of all goiters removed are of the diffuse type—a type in which malignancy is rare—it follows that the chances that a given goiter may show unsuspected malignant change are nearly doubled, if the goiter is of the nodular type. The estimated incidence of undiagnosed malignancy is roughly 2 per cent.

The picture of hyperthyroidism is known to everyone practising medicine, and it is necessary to distinguish the syndrome in youth and in old age. In children the picture is usually a clear-cut full blown picture of hyperthyroidism. The problem in the child, more so than in the adult, resolves itself into controlling excessive emotional instability. It is important that the child have no suspicion of contemplated surgery unless old and stable enough to cooperate. Avertin here has been of definite value, a child's tolerance for the drug being fairly high. The picture of hyperthyroidism in the aged is one of sharp contrast to that seen in the youth. The hyperkinetic syndrome is replaced by exhaustion, emotionalism by delirium, and simple tachycardia by auricular fibrillation with decompensation, with superadded changes of senility affecting the circulation of the myocardium and the brain. With acidosis and renal failure impending, pneumonia a constant threat, the risk of operation great, and the chance of recovery without medical treatment nil, (and as is often the case, these patients are iodine fast) there is little to hope for.

The question of anesthesia in thyroid surgery deserves comment, with particular reference to the thyrocardiac subject[13]. Lahey believes that local anesthesia is inferior to gases because there patients are unusually nervous, and that anesthesia is inadequate, unless block is used. Of the gases, nitrous oxide is dangerous on account of anoxemia. The best anesthetics in his opinion are ethylene, cyclopropane, ethylene-cyclopropane, or ethylene ether. He states that choice between the gases is of less importance than the proper conduct of anesthesia, which should include avoidance of anoxemia and obstruction, liberal premedication, minimal rebreathing. Those that prefer the subcutaneous infiltration of ½% procaine along the margins of the rectangular area bounded by a line connecting the midpoints of the clavicles along the anterior surfaces of the sternomastoid muscles from the angles of the jaw to the clavicles, then laterally to each sternomastoid muscle from a central point below the thyroid cartilage, do so because their patients being awake respond to conversation, and in that way prevent adductor paralyses due to recurrent nerve injuries.

Dr. K. M. Heard praises highly the use of avertin[14], stating that the subsequent course of gas anesthesia was so smooth as to abolish a major portion of the work and worry of thyroidectomy. This was due to the high percentage of oxygen tolerated, which seems to be the cardinal point in avertin's safety, allowing a mixture of 40% oxygen, and 60% nitrous oxide to be administered. Dosage was checked against the B. M. R. and the general condition of the patient. The very toxic never receive

over 100 mg. At the Barnes Hospital in St. Louis the use of avertin has become practically a routine measure.

MALIGNANCY

Malignancy of the thyroid gland is an ever increasing problem[15]. C. W. Mayo reports 737 cases of malignancy from 1906-1937 at the Mayo Clinic. These constituted 3% of the total malignancies operated for adenomatous goiter. In the group studied 23.4% were under forty years of age, and 9% were less than thirty years of age, the average age being 50 years.

Those cases in which thyroidectomy was combined with radiation presented some very interesting figures.

(1) 3 year survivals—11.5% better
(2) 5 year survivals—10.1% better
(3) 10 year survivals—57 % better

Survivals averaged over 50% better with combined surgery and irradiation. The largest percentage of their cases were carcinomas within adenomas of high grade malignancy. The most inocuous malignancy in their experience was the papillary type, usually of low historical grade; 90% of this group survived the five year period, and 75% were living ten or more years after operation. Of their total, 50% of carcinomas were within adenoma, 30% were of the papillary type, and the rest in a mixed group.

Allen Graham at the Cleveland Clinic classifies malignancies as:

(1) Sarcomata
  a. Lymphosarcoma.
  b. Spindle cell sarcoma
(2) Mixed tumors
(3) Carcinomata
  a. Not in adenomata
    1. Scirrhus
    2. Adenocarcinoma
  b. In adenomata
    1. Papillary carcinoma
    2. Malignant adenoma

Graham analyzed 270 cases. As to prognosis —mortality is 100% in sarcoma, mixed tumor, and scirrhus carcinoma. In adenocarcinoma, not arising in an adenoma the outlook is good; the tumor is often of microscopic size, low grade malignancy, and is usually only diagnosed by the pathologist. Out of 23 cases of this type, all patients are living. Five year cures were obtained in 50% of cases of papillary carcinoma treated by operation followed with irradiation. The prognosis of malignant adenoma (the most common type of thyroid malignancy) is less favorable than in the group of papillary carcinoma. Using combined surgery plus irradiation 25 (29.8%) of 84 patients lived over 3 years, and of these 25, only 9 were well and had no recurrence. Of the entire group 14.2% are known to be alive and well 5 years after operation[12].

The scirrhus type are often operated too late. They are usually densely adherent to the surrounding structures, and metastasize to distant organs, more nearly always to the regional lymph glands and surrounding tissues. The malignant adenomas (virtually a carcinoma) occur usually in the middle-aged group, and metastasize by the blood stream to distant organs. These tumors, according to Dr. Wartman, often appear benign on microscopical appearance except for invasion of the blood vessels which may show either erosion of the blood vessels, actual tumor tissue invading the vessel, or numerous thrombi of carcinoma cells within the vessel. Distant metastatic implants often differentiate to a point where thyroxin is produced.

With reference to the X-ray response of these tumors it has been found that the scirrhus variety and the malignant adenomata are the most radio sensitive. Of all the carcinomas of the thyroid malignant adenomas constitute about 15-20% of the entire group[16].

Treatment is radical regardless of structure. In advanced cases, treament is directed purely to increase the comfort of the patient. A word about pre-operative irradiation—it it sufficient to state that it is contra-indicated in cases with severe dyspnea and known respiratory obstruction, because it may produce enough edema to completely obstruct the trachea. Pain radiating behind the ear is a late symptom of malignancy of the thyroid and is the result of metastatic involvement of the cervical plexus by extracapsular extension. Metastases to remote organs occur in the following order of frequency: regional lymph nodes, lungs, pelvis, spine, sternum, clavcile, femur, skull, and ribs.

SUMMARY

(1) A historical review of the thyroid gland and phases of its surgical development are here outlined.

(2) An attempt has been made to trace the development of thyroid surgery through the various phases of its development.

(3) Aside from biochemical refinement, and more thorough dissection and isolation of structures, certain fundamental concepts of thyroid disease must be recognized.

Flagstaff Hospital.

BIBLIOGRAPHY

1. Noehren, A. W., and A. H.—Goiter History, Jour. Surg., 44:488-500, Aug. 1936.
2. Pemberton, de J.—Dev. of Surgery of the Thyroid. Northwest. Univ. Bull. Med. School, 36:24, pp. 1-15, 1936.
3. Rienhoff, Wm. F.—Anatomy of Thyroid Gland. Dean Lewis Surgery, 6:14-16.
4. Hertzler—Surgical Path. of the Thyroid.
5. Wolf—Endocrinology in Modern Practice (Text) 1:281-285, 1936.
6. Kern, R. L.—Iodine in Goitre (Personal communication, Med. clinic, U. of Pa., Nov. 1937.
7. Blanck, E. E.—Preop. Iodine Therapy in Hyperthyroidism, Surg. Gyn. Obst., 62:213-216, Feb. 1936.
8. DeCourcy, J. L.—Present Status of Iodine in Exophthalmic Goitre, Arch. Surg., 32:346-354, Feb. 1936.
9. Keynes, Sir Geoffrey—Surg. Treat. of Goitre, Practitioner, 135:743-756, Dec. 1935.
10. Ranzi, E.—Indications for Goitre Operations, Wien. Klin. Wchsch., 42:784-785, June 22, 1934.
11. Ranzi, E.—Indications for Goitre Operations, J. de Chirurgie, 44:82, July 1934.
12. Crile—Surg. Clin. No. America, 15:858-884, Aug. 1935. Thyroid Problems and End Results of Surgery.
13. Lahey, Sise—Anesthesia in Thyrocardiac Subjects. J. A. M.A., 105:1662-66, Nov. 23, 1935.
14. Heard, K. M.—Avertin in Thyroid Surgery—Canad. M. A.J., 33:395-400, Oct. 1937.
15. Mayo, C. W. — Malignancy of Thyroid, West. Journ. Surg., 45:555-63, Oct. 1937.
16. Wartman, E. L.—Lakeside Hosp., Cleveland, Malignancy of Thyroid (Personal communication at Lankenau Hosp., Philadelphia, Nov. 1937).

AMERICA AT WAR

APPOINTMENT POLICIES

The Surgeon General of the Army published detailed information concerning policies governing the initial appointment of physicians as medical officers on April 23, 1942. Necessary changes are given wide publicity, at his request, in order that the individual applicants, and all concerned in the procurement of medical officers, may know the status of such appointments.

The current military program provides for a definite number of position vacancies in the different grades. The number of such positions must necessarily determine the promotion of officers already on duty and, in addition, the appointment of new officers from civilian life. Such appointments are limited to qualified physicians required to fill the position vacancies for which no equally well qualified medical officers are available. Such positions calling for an increase in grade should be filled by promotion of those already in the service, insofar as possible, and not by new appointments.

If this policy is not followed, it would definitely penalize a large number of well qualified Lieutenants and Captains already on duty by blocking their promotions which have been earned by hard work. In view of these facts, it has been deemed necessary to raise the standards of training and experience for appointment in grades above that of First Lieutenant.

With this in view, The Surgeon General has announced the following policy which will govern action to be taken on all applications after September 15, 1942:

All appointments will be recommended in the grade of First Lieutenant with the following exceptions:

CAPTAIN. 1. Eligible applicants between the ages of 37 and 45 will be considered for appointment in the grade of Captain by reason of their age and general unclassified medical training and experience.

2. Below the age of 37 and ABOVE the age of 32, CONSIDERATION for appointment in the grade of Captain will be given to applicants who meet all of the following minimum requirements:

a. Graduation from an approved medical school.

b. Internship of not less than one year, preferably of the rotating type.

c. Special training consisting of 3 years' residency in a recognized specialty.

d. An additional period of not less than 2 years of study and/or practice limited to the specialty.

3. Eligible applicants who previously held commissions in the grade of Captain in the Medical Corps (Regular Army, National Guard of the United States, or Officers Reserve Corps) MAY BE CONSIDERED for appointment in that grade provided they have not passed the age of 45 years.

MAJOR. 1. Eligible applicants between the ages of 37 and 55 MAY BE CONSIDERED for appointment under the following conditions:

a. Graduation from an approved school.

b. Internship of not less than one year, preferably of the rotating type.

c. Special training consisting of 3 years' residency in a recognized specialty.

d. An additional period of not less than 7

years of study and/or practice limited to the specialty.

e. The existence of appropriate position vacancies.

f. Additional training of a special nature of value to the military service, in lieu of the above.

2. Applicants previously commissioned as Majors in the Medical Corps (Regular Army, National Guard of the United States, or Officers Reserve Corps) whose training and experience qualify them for appropriate assignments may be CONSIDERED for appointment in the grade of Major provided they have not passed the age of 55.

LIEUTENANT COLONEL AND COLONEL. In veiw of the small number of assignment vacancies for individuals of such grade, and the large number of Reserve Officers of these grade who are being called to duty, such appointments will be limited. Wherever possible, promotion of qualified officers on duty will be utilized to fill the position vacancies.

Much misunderstanding has arisen concerning recognition by Specialty Boards and membership in specialty groups. It will be noted that mention is not made of these in the preceding paragraphs. This is due to the varition in requirements of the different Boards and organizations. Membership and recognition are definite factors in determining the professional background of the individual, but are NOT the deciding factors, as so many physicians have been led to believe.

The action of the Grading Board, established by The Surgeon General in his office, is final in tendering initial appointments. Proper consideration must be given such factors as age, position vacancies, the functions of command, and orignial assignments. All questionable initial grades are decided by this Board. Due to the lack of time, no reconsideration can be given.

There are in the age group 24-45 more than a sufficient number of eligible, qualified physicians to meet the Medical Department requirements. It is upon this age group that the Congress has imposed a definite obligation of military service through the medium of the Selective Service Act. The physicians in this group are ones needed NOW for active duty. The requirements are immediate and imperative. Applicants beyond 45 years may be considered for appointment only if they possess special qualifications for assignment to positions appropriate to the grade of MAJOR or above.

A SURGEON'S PRAYER IN WARTIME

By John J. Moorhead

God of Battle, grant that the wounded may swiftly arrive at their hospital haven, so that the safeguards of modern surgery may surround them, to the end that their pain is assuaged and their broken bodies are mended.

Grant me as a surgeon gentle skill and intelligent foresight to bar the path to such sordid enemies as shock, hemorrhage and infection.

Give me plentifully the blood of their noncombatant fellow man, so that their vital fluid may be replaced and thus make all the donor people realize that they, too, have given their life's blood in a noble cause.

Give me the instruments of my calling so that my work may be swift and accurate; but provide me with resourceful ingenuity so that I may do without bounteous supplies.

Strengthen my hand, endow me with valiant energy to go on through day and night; and keep my heart and brain attuned to duty and great opportunity.

Let me never forget that a life or a limb is in my keeping and do not let my judgment falter.

Enable me to give renewed courage and hope to the living and comfort the dying.

Let me never forget that in the battles to be won, I too must play my part, to the glory of a great calling and as a follower of the Great Physician. Amen.

FILM ON EMERGENCY MEDICAL SERVICE

The Medical Division of the Office of Civilian Defense has produced a sound slide film on the operation of the Emergency Medical Service.

The film shows the integration of the medical activities with those of other protective services during an air raid or other war disaster. The pictures show a Control Center, its equipment and operation; the work of a Casualty Station and a First Aid Post; a Medical Supply Depot; plans for a Decontamination Station and other important features of the procedures worked out by the Office of Civilian Defense for civilian protection.

NAVY FLIGHT SURGEONS

By a recent order the insignia of Navy Medical Officers qualified as Flight Surgeons is to be the traditional gold wings with a gold oak leaf and silver acorn superimposed on the central oval crest. This pin is worn over the left breast. The symbols of the oak leaf and acorn are associated with the Druids, ancient medical priests of the Britons, who wore white robes with these designs embroidered in gold on the sleeve. The Medical Corps of the Navy has used these insignia since 1832.

DENTISTS IN CIVILIAN DEFENSE

The Medical Division of the Office of Civilian Defense has recently collaborated with the American Dental Association in the preparation of the following official memorandum setting forth the role of dentists in civilian defense:

The Office of Civilian Defense recognizes the importance of the dental profession in the everyday life of the American people and expects the dentists to take an important part in civilian defense in time of emergency. The dentist must take his place beside the medical officer and should be prepared for special duties which he is equipped to perform by virtue of his training. Specific ways in which the dentist can contribute his services are:

1. Dentists should take refresher courses in First Aid which will qualify them as American Red Cross First Aid Instructors. Physicians and Dentists, though they may be well trained in the principles of first aid, may benefit by refresher courses and instruction in teaching methods.

2. In addition to preparing themselves as qualified first aid instructors, it is important that as many dentists as possible be trained in those first aid procedures which can only be carried out in the field casualty service by members of the medical and dental professions. Air raid casualties are usually of great severity. Almost half may be killed immediately or die soon after the incident. The remainder suffer largely from grave crushing or penetrating injuries and require morphine and the care of professional experts both at the site of the incident as well as in the Casualty Receiving Hospital. A dentist with supplementary training can be of great assistance to physicians in their field and hospital work.

CONFERENCE POSTPONED

The Executive Committee of the Rocky Mountain Medical Conference has by unanimous vote directed that the Fourth Biennial Meeting of the Conference, originally scheduled for May 19, 20, and 21, 1943, at Albuquerque, N. M., be postponed indefinitely on account of war conditions. The Committee requests that suitable publicity be given to this fact.

The current organization of the Conference will be retained subject to further advice from the Continuing Committee, and current funds of the Conference will be invested in United States War Bonds in so far as is practicable.

SOCIETY ACTIVITIES

WARNER W. WATKINS, M. D.
Secretary
Arizona State Medical Association

L. B. COHENOUR, M. D.
Secretary
New Mexico Medical Society

LOUIS BRECK, M. D.
Secretary
Southwestern Medical Association

CHAS. F. RENNICK, M. D.
Secretary
El Paso County (Texas) Medical Society

SOUTHWESTERN MEDICAL ASSOCIATION

(Louis W. Breck, M. D., Associate Editor)

Since there is not going to be a meeting of the Southwestern Medical Association this fall, there is very little new to report. The author of this letter (Secretary of Southwestern Medical Association) has joined the Army of the United States and has closed his office for the duration of the war. He has been temporarily assigned to Fort Sam Houston (San Antonio, Texas) and before long will probably be assigned a great deal further away from home than that.

He has resigned the office of secretary and wishes to thank the Association for the honor and pleasure of holding that office for two years. From now on communications regarding Southwestern Medical Association should be addressed to its President, Dr. C. A. Thomas. As stated previously in the Southwestern Medical Association editorial letter, it is very difficult to get news about various members of this association as there is no news gathering agency. One thing is certain, and that is that the Southwest has done as much or more than any other section of the country in providing medical officers for the Armed Forces. Every able-bodied doctor in El Paso under 45 with only 2 or 3 exceptions, is now in the Service and Arizona and New Mexico have a similar excellent record. The younger men of this organization are looking forward to returning to the Southwestern Medical Association at the end of the war and making it an even better organization than it was before.

Louis W. Breck, M. D., Secretary

EL PASO COUNTY (TEXAS) MEDICAL SOCIETY

(W. John Pangman, Associate Editor)

El Paso County Medical Society met on September 29, 1942, at Hotel Cortez.

The program:

1. Pyloric Obstruction in Adults—2 Cases —Dr. J. L. Green.

2. (a) Case Presenting Intersting Features in Diagnosis. (b) Unexplained Fever in Cases Exhibiting Positive Agglutination for Proteus X 19—Dr. L. O. Dutton.

ARIZONA STATE MEDICAL ASSOCIATION

(J. D. Hamer, Associate Editor)

Minutes of General Session

Fifty-First Annual Meeting
Prescott, Ariz., May 25-30, 1942

The opening general session was called to order at 10:20 a. m., May 26th, in the Lodge Room of the Elks Club, Prescott, by the president, Dr. W. Paul Holbrook (Tucson).

The Invocation was given by the Reverend Charles Franklin Parker of Prescott.

Senator Paul Keefe of Prescott was introduced by Dr. Holbrook, as follows: It gives me pleasure to present to the Association, Senator Paul Keefe, president of the Senate and a real friend of the medical profession. Senator Keefe proved himself devoted to public health and the welfare fo the citizens of the state in his staunch support of the public health measures backed by the medical profession. I give you Senator Paul Keefe of Yavapai County.

Senator Keefe: Members of the Arizona State Medical Association and their guests, ladies and gentlemen: It is not in order to make a long speech of welcome. You have interesting subjects to be discussed by eminent members of your profession, so I will make my remarks snappy and to the point. Your president's remarks have reference to the special session of the legislature. During the regular session, I and some other members of the legislature made a mistake, and a bill slipped through which made osteopaths surgeons. It was my pleasure, in the special session, to help undo that mistake and correct the wrong which was done in the closing hours of the regular session.

It is a pleasure to assure you, ladies and gentlemen, that Yavapai County feels fortunate in having you here for your meeting. We recognize you as a group of men and women who go about the world doing good, helping mankind, spending your time and strength in the matter of research so that you can help us who need your services. I will now tell a story on Dr. Swetnam which is really on me. Your Dr. Swetnam of Prescott and I, some thirty years or more ago, were riding south of Prescott when we came to a stream of water, and got off our horses to take a drink. As I put my head down to drink, Dr. Swetnam halted me and showed me how to put my head down to drink. I did and then he said to me, "Do you know what you have done? Do you know what this stream of water is? You drank out of the Hassayampa River with your head upstream; anyone who does this will never leave the territory and will never tell the truth again." I am still here. Was hoping that Dr. Swetnam might have time to take some of you to the river and let you drink with the head upstream, so that you will stay.

On behalf of the people of Yavapai County, we thank you for coming here for this meeting;

we hope that you will come back again shortly.

Dr. Holbrook: Mayor McCabe, unfortunately, is ill in bed, and Mr. McDowell is acting mayor and will welcome the Association on behalf of the city of Prescott.

Mr. McDowell: Mr. President, members of the Association, ladies and gentlemen: There is not much that I can say except that Prescott is proud to be host to this convention. We understand that you will have many important problems to consider. Prescott and Yavapai County are the hub of enchanted circle, with the Grand Canyon on the north. We hope that you will find time to enjoy some of these wonders. We think that our doctors will take care of you and we hope that you will return, especially to the Frontier Days and the first Sunday in August and help us with the Smoki ceremonials. We feel it a privilege to be host to your convention of 1942. Thank you.

Dr. Holbrook: Whenever medicine is discussed in Arizona or the southwest, or pioneers are mentioned, I notice that one name is always mentioned among the pioneers of Arizona, with something of national recognition. The record of medicine in Arizona is linked to Prescott through one of its pioneer physicians—Dr. John W. Flinn, who will speak for the Yavapai County Medical Society.

Dr. Flinn: Mr. President, fellow members of the Arizona State Medical Association and invited guests. There have always been red letter days in the history of the Yavapai County Medical Society when we have had the pleasure and privilege of playing hosts. I say "playing hosts" to the other members of the Association and to our invited guests. To an experienced eye it would seem that this meeting perhaps would have a bit more of a scarlet tinge than any of its predecessors. It is always a privilege to welcome the State Medical Association to Prescott, but today the privilege is a hundredfold greater on account of the problems which will be presented to us. Many times greater than at any time during the fifty years history of this Association. It is an interesting coincidence that the opening meeting of the first Association, the opening session of the first meeting of the Arizona Territorial Medical Association was held exactly fifty years ago yesterday on May 25, 1892, when this Association had its beginning. During these fifty years, the medical profession of Arizona has faced many problems but none which begin to compare in importance with the problems which face us today. We are confident, Mr. President, we in Yavapai County, that the medical profession of Arizona will respond and creditably meet any responsibilities that come to us in this great crisis. The Program Committee, under the able leadership of the President-Elect (Dr. E. Payne Palmer) and of the secretary, has compiled for us a most interesting program and most interesting discussions. We are particularly fortunate in having with us an unusually large number of visiting guests, eminent men of the profession from the east and the west, to present papers and to lead discussions. Everyone of us here is possessed with the idea that our duty in this matter is to give to these questions the most intensive concentration possible within the next three days. We look foreward to three days filled with intensive work, and for the sake of some of our older friends, whose names I would rather not mention in public, I presume the nights will be given over to play. So far as the social end of this program is concerned, the least said the better. You have probably all read that most interesting narrative of Kelland's in the Saturday Evening Post. With meticulous accuracy, Kelland has painted social life up and down Whiskey Row, as it was sixty years ago. Whiskey Row is still with us in its pristine purity, and you have an opportunity to judge just how correctly Kelland colored the situation. There is one encouraging feature of the social end of the program and that is that we have in Prescott an unusually competent emergency crew, well mannered gentlemen who will be very pleased indeed to gather up the remains, or shall I say the remnants, and ship them to your friends at home C. O. D. To those who may be fortunate enough to return home alive, you will at least have established a record in your family history, a legend stating that dad or grand-dad, was immortalized by losing an eye, or leg or arm in the medical meeting in Prescott in 1942.

(Dr. Clarence Gunter of Globe, who was scheduled to make the response for the Association, was absent, and this feature was omitted.)

Dr. Holbrook: Your president, I see, is on

the program for a report. I have very little to say and will make this report brief.

It has been a pleasure and an honor to serve as president of this Association during the past year, and I shall briefly mention only a few things which have occurred directly affecting the medical profession in the state during the year past. Let it be understood that anything we have accomplished has been due to the hard persevering work of the committees, the council and the component county societies. Your president, as such, can lay claim to no accomplishments, except as the whole unit of the Medical Association has worked together during the past year. This has been something of a demonstration year in Arizona medicine.

We have had the question of the osteopaths being made surgeons by legislation to face, which has been mentioned. It has been met and completely and satisfactorily settled in the special session of the legislature.

We have seen the organization and successful growth of the Arivona Physicians' Committee, under the leadership of your President-Elect, who will, I hope, have something more to say about this Committee. It was designed to further the public health of the state and to place Arizona medicine in the forefront, not only in a medical way which the Association is doing, but also in the realm of public relations.

We have seen the war emergency develop which has brought profound changes into many of our lives and will undoubtedly disturb all of us more profoundly before many months. This situation has been met by the doctors of the state, willingly, cheerfully, both voluntarily and through the Procurement and Assignment Service. So far as the physicians of Arizona are concerned, we can assure our government that there will never be any need for a draft of physicians, as more men are willing and anxious to go than there will be need for. Your local Procurement Committee has worked untiringly and without recompense. The chairman of that committee has written with his own hands on the typewriter, three or four hundred letters in connection with the Procurement and Assignment Service in this state. He has been supported by this Association and the national organization.

During the past year, your Association has devised and at the last session of the House of Delegates, adopted a long range planning program, which is designed to avoid allowing emergency of war, or legislative difficulties of any type to destroy the gains already made, and making it possible for the Arizona Medical Association to become constantly more united, more powerful and better organized to carry on its function as an organization. Probably 25 to 35 percent of the doctors of this Association will soon be in active military service. This puts a greater burden of financial support on those who remain. It is necessary and essential that this organization go straight forward, with increasing gains rather than losing ground or standing still during the emergency.

During the past year, considerable progress has been made with regard to the recognition of this Association in matters of public health. Our present governor, after being interviewed early in the year, has consulted the medical Association with regard to every appointment made by him which affects public health. He or any succeeding governor will do likewise, if the matter is placed squarely on his doorstep by this Association.

Plans have been devised by your Council to reawaken and reunify the interest of the medical profession in the medical Association, particularly with regard to the northern counties, which, due to sparse population and long distances, have had few regular meetings, nor have they been a real unit of the Association, as they should be. You will hear more of this shortly, as plans are under way to tie them more closely to the state Association.

As the war goes on and more men enter the active service, the post-war period should already be considered. When the war is over and those of us who have gone will return, economic conditions throughout the country will be unquestionably somewhat chaotic. The problems of the practice of medicine undoubtedly will be in the forefront. All sorts of crackbrained schemes, from the standpoint of free medical care and socialized medicine will be brought to your state and national legislatures. Modern medicine will face, in this post-war period, the most difficult and trying time it has ever faced. We have the obligation to maintain our organization of county societies, state associations and parent organization of American Medical Association, in the closest possible relationship, if we are to hope to maintain anything like the practice of medicine as we have

heretofore known it. And if we can prevent the growth of various isms and a completely socialized medical schemes which undoubtedly will be thrust on us, we will have to object to it vigorously. To accomplish this, the medical profession must be a unit as never before. I urge you, in these coming years, to build these safeguards of unity of medicine, of professional ethics and of the practice of the ideals of medicine, stronger than they have been built before. In that connection, it is incumbent on the members of this Association to stop being passive, stop the attitude of no-interest in politics. It is an obligation on each of us to become interested in whom our legislators are, what their attitude is toward public health, and we must come out completely for the legislation and the type of legislator who will stand for what we know, and he knows, is for the interest of the public health. Each county society should continue its contact with its own legislators. The state Association should keep close watch on every bit of contemplated legislation, and if we stay on the job, we need have no fear. Silence gives consent when legislative matters are up, and the medical profession has been inarticulate too long with regard to matters of public health.

As the years pass, this Association, in spite of the depletion of its membership by the war, will get stronger and stronger. This is due to the wisdom of your choice of future officers, men who are fired with enthusiasm and courage. As this will probably be my last opportunity to see you for a time, since I am going almost immediately into active service, I would like to give you at this time, as your next president, the youngest man of the Association, the man who has the most vigor, the most fire, the bettingest man and the most courageous man I know; I do not see how the Association can fail to go ahead with its ideals untarnished and continually progressing, under his leadership. I give you Dr. E. Payne Palmer, your new President.

Dr. E. Payne Palmer: The title of this paper should be "To whom much is given much also is demanded." However, we do not think that would be of so much interest. In 1900 we first came to Prescott, and we are coming back again now after more than forty years, so that this address is appropriate.

(Dr. Palmer reads the "Address of the President-Elect, on 'Arizona Medicine of 1900 and Today.'") This address was published in the June issue of Southwestern Medicine.

Dr. Palmer: We have with us an honored guest whom we delight to welcome, the past president of the California Medical Association, who also is head of the Procurement and Assignment Service for the Ninth Corps Area. We always feel proud when we can get a Californian over here, because they go to the best places. We introduce Dr. Henry Stanley Rogers of Petaluma, Calif.

Dr. Rogers: I am just a country doctor practicing medicine in a country town and what I have to say will have a country flavor. He reads paper on "American Medicine and the National Emergency."

President Palmer at this point introduced Lieut. Edw. O'Hara, who was a guest of Dr. Paul Palmer. Lieut. O'Hara declined to make a talk.

Dr. Rogers then gave an informal talk on the Procurement and Assignment Service. He stated that the PAS cannot move a man from one place to another, but that Mr. McNutt has been made head of the Man Power mobilization of the nation and when the necessity arises, he can probably move any man to the place he is most needed. He stated they were told at the recent Omaha Conference of the PAS, that if the war continued we would need 45,000 physicians for the armed services; there are only 62,000 doctors under 45 years of age, and from this number must come most of the 45,000 we need. Out of the 62,000, there are 6,000 women, 3,000 colored and 3,000 aliens, and 6,000 disabled; that means that there are only 42,000 available for the army and navy needs. About the first of July there will be available about 4,000 young physicians for the services, and in another year there will be about the same number; so that apparently there will be enough.

Question: Is there any checkup being made to see if doctors are filling out their forms?

Answer: It is a little too early to say about that. The doctors in the age group under 37 who have failed to fill out these forms will not be handled with kid gloves. The PAS is under the Selective Service which is the law of the land. A lot of these doctors would be in the service as privates, but for the PAS asking for

their deferment. Some have been drafted in the east. A 3A- classification will not hold because the pay of the lowest commission for a doctor (First Lieutenant) will take care of the family. Any classification is good for only six months. A draft board can change a 3-A to 1-A any time they wish and the claim of dependents is not valid for doctors.

Dr. C. A. Thomas: There are a few instances in this state where men under 37 have taken civilian work or industrial work which they think is sufficient to exempt them from army service. What are the jobs that are considered so "essential" as to exempt them from army service?

Answer: That is up to the local PAS committee. If the committee thinks that some older man can do that work, they can list the younger man as available. The question is whether the man can be replaced by an older man who can do the industrial work. The older man can usually be secured if the industry will pay more for his services. It is up to the local committee to say whether a man is essential or available. Conscientious objectors do not enter the picture, because the duties of the doctor is non-combatant work.

At this point the meeting was turned over to Dr. John W. Flinn to conduct the Memorial Service for deceased members of the Association, which has become an established custom in our annual meetings.

The Report of the Committee on Obituaries was read by Dr. Flinn, naming the deceased members and giving a few historical facts regarding them.

IN MEMORIAM

Zachary Causey, Douglas, Ariz.
William F. Chenoweth, Nogales, Ariz.
John Chiavetta, Phoenix, Ariz.
Albert L. Gustetter, Nogales, Ariz.
John J. McLoone, Phoenix, Ariz.
James W. Morris, Safford, Ariz.
William E. Platt, Safford, Ariz.
James B. Van Horn, Tucson, Ariz.

Violin music was furnished by Mrs. Charles Ewing; prayer was offered by Rev. M. E. Travers, and taps was sounded by Richard Miller.

Forenoon session then quietly adjourned.

At the noon hour (12:15 to 1:45), two Clinical Luncheons were held. The Medical Luncheon was presided over by Dr. John W. Flinn, and the speaker was Dr. Noble Wylie Jones of Portland, Ore., who discussed "Problems of Regimented Medicine in British Columbia, Australia and New Zealand."

The Surgical Luncheon was presided over by Dr. C. E. Yount, and the speaker was Dr. Verne Hunt of Los Angeles, who discussed "Surgical Principles Involved in Eradication of Lesions of the Colon."

Wednesday Afternoon Session, May 27

Session convened at 2:15 p. m., and the president introduced Dr. Noble Wylie Jones, of Portland, Ore.

Dr. Jones: I wish to thank you for inviting me here to take part in this program, and I might confess to a feeling of hesitation in bringing two such controversial subjects as I have chosen. Possibly these will be of keener interest because they are controversial and so common. The question of chronic infection as related to cardiovascular disease is an old one, with an extensive literature and still it is remarkable that there is so little about it that is recognized as proven. That is in contradistinction to the question of cardiovascular syphilis which for a long time has been recognized as a clinical entity, even before the organisms of syphilis were found histologically in the walls of the arteries. Still one remembers also that experimental cardiac syphilis has never been produced.

(Dr. Jones then talked from lantern slides and without manuscript, on "Relation of Infection to changes in the Arteries, Particularly the Coronary Arteries.")

Dr. Palmer then introduced Dr. Joseph Brennemann of Los Angeles who discussed "Acute Abdominal Conditions in Children." He talked from slides and without manuscript. The high points of his discussion are summarized below:

Dr. Brennemann: Dr. Palmer some time ago asked me to come over here. I am getting along in years and thought the torch of enlightenment should be handed over to younger men. However, after thinking it over, I had a desire to see once more a real blue sky the like of which we do not have in California, so I accepted. Then came the question of what to talk about. I am a general practitioner who took the precaution to limit my work to the early period of life. For more than twenty years, as head of a large children's hospital, I saw practically every acute abdominal condition which came into the

hospital. I am still more interested in the acute abdomen than anything else in pediatrics.

The approach to the child is difficult; the child does not talk like the adult, who usually talks too much. The child gives a clear history when he talks. Most pediatricians are more at ease with a child the younger it is, and feel more at ease with a baby than any other age. Palpation is important and especially palpation which elicits tenderness. Frequently the condition is aggravated by massage. Do not ask, "Does it hurt?" Keep your eye on the indicator which is the childs' face; the child will wince or say "ouch."

He described three type of acute abdominal conditions: (1) Obstructions; (2) Hemorrhages; (3) Infections.

1. (a) Atresia of the esophagus; has seen 15 or 20 such cases, and is still willing to let the child die without meddlesome punishment.

(b) Pyloric obstruction: Still a mystery why it waits two or three weeks to develop. Have to distinguish between spasm and pyloric tumor. There is one striking difference; spasm will yield to careful feeding and atropine. In cases of tumor, you can feel the tumor about the size of a grain of corn; almost never can cure these medically. Can make the diagnosis without barium meal or x-ray. Remember that atropine will run the temperature up; have seen it as high af 106.

(c) Duodenal obstruction not frequent. They all vomit bile which the pyloric obstruction case practically never does. X-ray will help here because you can find the point of obstruction.

(d) Intussusception is the melodramatic thing in pediatrics. When a mother calls you up and says, "My baby is vomiting and is crying," and she is able to tell you the exact time the baby started to cry, better go to see that child. Nothing begins as abruptly as this condition. The child may be peacefully sleeping and will wake up with a scream and fights with pain. It is likely to be muffed by the mother and the doctor. It is muffed because the crying stops after a time; after beginning with the intense colicky pain, in a few hours the child no longer cries but lies rather quiet; he lies with a resigned expression on the face which is fairly characteristic; they practically never smile. I saw one who smiled, but there is no "always" in medicine. Child may turn to one side and draw up the leg or may moan. Uusually there is one normal stool and then no further stool, or there is blood or glairy mucus. The blood which is passed never coagulates and there is never much of it, and it is usually mixed with mucus —practically a pathognomonic symptom. About three times have felt the tumor by rectum. Children rarely cry when making the rectal examination; when pulling the finger out there is usually a silent spurt of something which looks like current jelly, and that is practically pathognomonic. Can usually feel the tumor.

(e) There are other obstructions, such a congenital narrowings. These do not have bleeding in the stool. Stricture of the lower end of the canal have seen at least 20 times. Obstruction at the anus is not in the muscle but just above the sphincter, at the fusion point of the end gut with the anus. When the iris diaphragm obstruction is once dilated it remains so, so that it is not muscle.

2. Hemorrhages: Hemorrhage from the bowel is always a serious symptom. Interpretation depends on many things. Does it clot? Is it bright? Is it coffee ground? Is it inside or outside of the bowel movement?

(a) Henoch's Purpura.

(b) Bleeding Meckle's; seen about 15 times; sudden, fairly large hemorrhage from the bowel, teacupful or more; usually very bright but may be darker; always clots, which distinguishes it from intussusception; usually painless. Can have ulcer in a Meckle's; a very small ulcer can have a great deal of bleeding.

(c) Polyps: Several cases on record. Difficult to diagnosis.

3. Infections. Very briefly discussed appendicitis and peritonitis. The latter is sometimes hard and sometimes easy to diagnose. If a tube has been put in there may not be any distention. They have pain, they vomit constantly and have distention, otherwise. Streptococci are the cause as often as pneumococci. The question of whether to operate or not in appendicitis; this depends on the history, whether associated with appendicitis or whether primary. The sulfa drugs have altered the picture. It would be very desirable to have some exact method of diagnosis. Can make a puncture and see what the infecting organism is; the therapeutic test with the sulfa drugs usually obviates the necessity of doing this. The Lavene tube can be used too much.

Dr. Noble Wylie Jones at this point conducted a panel discussion on "Medical Management of Low Grade Chronic Cholecystitis. A brief summary of his opening remarks follows:

This subject may not be interesting. Dr. Holbrook said that we might, as a background, mention the work of Dr. Stone. He gave six indications for surgery in gall bladder disease: (1) Recurrent biliary colic; (2) Severe acute attack; (3) Obstructive jaundice; (4) Other abdominal conditions with gall bladder disease found on exploration; (5) Finding of a solitary stone, because have had very severe acute inflammation with solitary stone; we invariably advise operation in those cases; (6) Continued digestive distress, either with stone or with malfunction of gall bladder. It is with this last group that we do not agree. Some year ago we tried to study the problem of the chronic asthenic patient; about the same time, Goldwater of Boston published work describing the automechanism of that build of patient; Lane of London was doing ileostomies and colectomies for what he called intestinal stasis; Raufsing and others were hitching up the mobile colon; Coffey was going one step further with his hammock operation. None of these seemed logical and from the medical standpoint, first tried to work out a method to rebuild these people, and this led to the formulation of what I think are fundamental principles, namely:

(1) Complete regulation of the gastro-intestinal tract by diet for the motor mechanism; (2) putting on weight, and (3) building the body tone and habitus.

Such a program will usually take from two to four years of constant rebuilding to bring about a satisfactory end result, buf it can be brought about and the gastro-intestinal tract be made to work normally.

With regard to the first point, we ran across a certain number of patients in whom we could not regulate the bowel or stomach, but would upset them and produce gas, with pain, oftentimes vomiting, sometimes diarrhea. For an explanation of this, discussed the problem with Alvarez (then of San Francisco), and it seemed to fit with his gradient idea. (Discussed this from lantern slides.) Usually these patients show gall-bladder infection. Have used this method for unknown surgical and medical conditions in the abdomen. When the technic of visualizing the gall bladder shadow on the film, we began to use the x-ray in diagnosing chronic gall bladder disease. This was vastly improved when dye visualization came into use. Study of these patients led us to still continue that type of diagnostic work, making use of the dye only for verifying the other findings. We found instances of gall stones without any symptoms whatever; others with very definite symptoms which under ordinary circumstances most surgeons would consider surgical, but by putting them to bed and relieving the motor disturbances by diet and belladonna, we found that roughly 70% of these low grade chronic gall bladder cases did not need to be considered surgical. With regard to Dr. Stone's statement that when such a patient was operated on and had no relief, it was a mistaken diagnosis; sometimes, after operation when the motor disturbance had not been removed, we concluded that these were the chief cause of the symptoms and they were simply secondary to the gall bladder condition. We know now that this does not always hold true, as shown by the work of Ivy and others on Dyskinesia. The motor disturbances of the biliary tract would have the same fundamental basis as those of the gastro-intestinal tract, and would be relieved by the same treatment. Have often seen patients who have been operated on and been relieved by the operation, and then through some error in diet or living habits, will have a recurrence of their pain and distress which was exactly as before the operation; when put to bed on an ulcer regimen or similar diet with liberal amounts of belladonna and bowel regulation, the motor disturbance will entirely disappear. You can see the motor distrubance disappear under the fluoroscope. They may disappear and then come back; this usually means a low body tone. They need longer periods of body build-up. Horseback riding is good. Have continued to make use of this plan all these years, but do not think many others have done it. Do not think diet alone can be used to determine the probability or even the possibility of gall bladder disease. This last group is the largest group and roughly about 80% of them are relieved medically, about 10% come to surgery and the others are not relieved.

(Dr. Jones showed several films of gall bladders, several of these by the old method of Leonard and George, which has been largely

forgotten but is still valuable. As to why the shadow of the gall bladder on the film would vary in density, some chemical analyses have been carried out. The normal gall bladder wall contains .02 grams per cent of calcium oxalate, while the gall bladders whose shadows were classed as two plus, the calcium oxalate had doubled and those with four plus shadows went as high as .16 grams per cent.)

Do not pay an attention to the functional dye test to determine operability. A series of films were then shown, illustrating types of shadow, with and without stones and the effect of dye.

Dr. Robt. S. Flinn of Phoenix and Dr. Chas. S. Kibler discussed the presentations of Dr. Jones. Dr. Kibler asked some questions: (1) Is cholic acid of any value in poorly functioning gall bladder? (2) Is there any value in drainage with Epsom salts? (3) Is there a relationship between poorly molite gall bladder and infection, or a poorly functioning gall bladder and infection?

Dr. Jones: Judd believed that most of these poorly functioning gall bladders were not infected; that it was a question of cholesterol deposition in the wall. He cultured many and found them sterile. With regard to dehydrochloric acid, I think we have seen some value in that. In this group where we think the symptoms are related to the motor disturbance, have not seen any benefit from the dehydrochloric acid nor from the use of bile salts; I think they aggravate the motor disturbance. With regard to Lyons' work, must confess that have not seen so much of it. Have had the feeling that those patients who had a number of so-called non-surgical drainages were aggravated and were much more apt to come to surgery. May be mistaken in that; Lyons still believes very firmly in it.

(There were some further questions and answers with regard to Dr. Jones' first address, but that was not supposed to be included in the panel discussion, so they were not reported.)

On Wednesday evening, May 27, the Stag Party, at which the male members, guests and visitors were entertained by the Yavapai County Medical Society, was held at the Hassayampa Country Club. The reports about this are such that probably it should be passed by without further comment.

Thursday Forenoon, May 28

Announcement was made regarding the illness of Dr. Wm. B. Watts of Miami, who looked forward to attending this meeting, but is now at La Jolla, Calif., seriously ill. Motion was made by Dr. Swackhamer and seconded by Dr. Yount that the Association send to Mrs. Watts the regrets of all members present over Dr. Watts' illness and their sincere wishes for his speedy recovery. This was carried viva voce. (Secretary sent this the same day, and a very cordially grateful reply was later received from Mrs. Watts.)

Dr. Palmer: The next guest speaker is one whom we all know and of whom we are proud. One of the leading surgeons of the country who will lead us in a double symposium. We have selected two good men of the state to collaborate and present the medical phases of the subjects.

Dr. Verne Hunt of Los Angeles will discuss Malignant Lesions of the Stomach and Dr. Joseph Bank of Phoenix will discuss Benign Lesions of the Stomach.

Dr. Hunt will then present the subject of Obstructive Jaundice and Dr. V. G. Presson of Tucson will discuss Non-Obstructive Jaundice.

Dr. Hunt: Mr. President and members of the Association. First of all, I want to say that I did not select these subjects, but they were selected for me by your president. However, I am happy to speak on these topics to the best of my ability and with what knowledge of the subjects I have.

It is a difficult matter to talk about cancer of the stomach and say the things we have been saying and must continue to say, and make them interesting. However, just so that I may not get too far afield, have prepared a paper which I will read, and show a few slides.

Dr. Hunt then read his paper (which was turned in for publication), and followed this with a lantern slide demonstration which was very enjoyable.

Dr Joseph Bank then presented a paper on "Benign Lesions of the Stomach."

Dr. Hunt: Would like to make a few comments on Dr. Bank's presentation. He has made a very fine presentation based on a tremendous amount of valuable material. Would like to comment on one or two of his statements and hope that he will not consider my remarks impertinent. In speaking of the treatment of

gastric ulcer, he had one sentence on his slide which said "no surgery if it can be avoided. Do not think he meant it just that way. As a matter of fact, surgery can be avoided in every gastric lesion except acute perforation; nothing else forces us to operate, so that I do not think he meant that statement that way. He probably meant that there are some definite indications for operating on gastric ulcers and he probably would subscribe in general to these, or most of them. (2) Most of us will agree that in these cases of ulcers of the stomach, there is gastric retention not because of obstruction but because of the interference with gastric motility by virtue of the involvement of the musculature of the stomach so that it will not empty. When one can be certain that this is happening and that the lesion will subside under medical treatment, well and good; however, some of these are not amenable to medical management. (3) In penetrating ulcer, especially into the pancreas, many of these are not amenable to medical treatment and some to surgery. (4) There are some lesions where we cannot be certain of the true nature of the pathology and these are certainly surgical; do not think he means that we should avoid surgery in such cases.

Dr. Bank made another statement, regarding which I hope he will not consider me impertinent, if I disagree. He said that once a gastric ulcer is operated on the patient must live an ulcer life forever thereafter. Would suggest that I do not agree with that. That used to be true in the days of gastro-enterostomy, when that operation was performed for duodenal ulcer and often for gastric ulcer. Local excision augmented by posterior gastro-enterostomy, is one of the most satisfactory operations so far as ulcer of the stomach is concerned; many of these patients get along on a regular diet without recurrence. During recent years, have developed a different conception of stomach surgery and usually some type of gastric resection is done. Some cases will not permit of this and more conservative operation is better, and a local excision with posterior gastro-enterostomy is done. In those patients who have had gastric resection, do not believe they should be put on a post-operative ulcer regimen. The extent of the gastric resection is an important matter. If one performs a partial gastrectomy usually it is necessary to cut above the ulcer, and it is important that we should have some idea about the extent of the gastric resection in treatment of recurrent ulcer or post-operative anastomotic ulcer. Dr. Bank said that it is unusual to see ulcer of any kind where achlorhydria exists. What do we wish to attain in the treatment of acidity? Do we wish to abolish the acid or do we wish to maintain a small amount of acid? Personally, I object to the three-fourths or four-fifths resection for duodenal ulcer or for the opening ulcer in the pyloric end of the stomach. When this much of the stomach is removed, for all practical purposes he has done a total gastrectomy; there is only a small portion of stomach left which serves not as a receptacle but as a passageway. It is important to preserve gastric function if possible in the gastric pouch. In my experience, have not seen an ulcer recur in any instance where we have performed the hemigastrectomy. In approximately 85% when the pre-operative acids were 100 or less, we have had an achlorhydria post-operatively. Wagenstein insists on having acid after histamine stimulation. That will not afford a reasonable insurance against post-operative ulcer. We do not live in a state of histamine stimulation. We are interested in the acids with a normal well-rounded diet, and fully 85% of the cases have achlorhydria after hemi-gastrectomy. So far as post-operative diet is concerned, since doing hemi-gastrectomy, do not put these patients back on ulcer diet; have found that they do better on a well-rounded general diet. That is necessary to maintain their weight and take care of their bile and pancreatic secretions. Some will develop diarrhea because they are advised to go on small frequent feedings and an ulcer diet which is not sufficient to take care of their pancreatic and bile secretions; they must have food in order to utilize these secretions, and we want these patients to have considerable volume of food. We encounter difficulty sometimes with patients who resent being told to have a well-rounded diet. Generally these people do not need small frequent feedings, but good stable food and lots of it. We have found that most of these patients can forget that they ever had an ulcer.

Dr. Banks: I appreciate what Dr. Hunt has said and am glad to accept all his statements. The statement about "no surgery if it can be

avoided" perhaps might apply more to duodenal ulcers than gastric ulcers. That was put in abbreviated form because I feel strongly that when surgery is done on ulcers, it should be extensive radical surgery rather than conservative surgery; that means that it should be resorted to only after careful consideration So far as surgery is concerned, there is still difference of opinion between medical men and surgeons. With regard to the statement that a patient with an ulcer should always be an ulcer patient, will illustrate by a recent incident. Only last Sunday, patient called on telephone from Philadelphia, wanting a definite opinion. He had had a duodenal ulcer in the second portion of the duodenum; it was never shown by x-ray but he persisted in having ulcer symptoms and was finally operated upon and the ulcer discovered, and partial resection done. This man had developed symptoms again and had a marginal ulcer. Such patients should be seen once or twice a year to be checked and should follow ulcer treatment. The problem of surgery should be considered carefully, and radical surgery should be used when surgical treatment is decided on; patients with the so-called ulcer diathesis must be treated indefinitely, because we do know that marginal ulcer can occur.

Dr. Hunt then read his paper on "Obstructive Jaundice," and showed many illustrations of cholangiograms by lantern slides.

Dr. V. G. Presson of Tucson then read a very instructive paper on "Non-Obstructive Jaundice."

Since both of these papers will be published in Southwestern Medicine, notes were not taken on them.

The Clinical Luncheon of this day was presided over by Dr. J. H. Allen and Dr. Joseph Brennemann was the speaker, the subject being "Acute Appendicitis in Children." Dr. Brenneman again spoke without manuscript, and the gist of his remarks is as follows:

You may wonder why a mere pediatrician should choose a surgical subject. I do not look on appendicitis as a surgical subject. In the hospitals where I have been we have had routine services of interns and residents, but not specialized services. For twenty years we never knew when a child who might have appendicitis ceased to be medical and became surgical, so we thought we should know something about it. We would see perhaps 25 to 100 children with abdominal pain before one looked bad enough to call the surgeon. Then we called him to get his opinion, but assuming that we have the same intelligence that he has, we should know as much about the diagnosis as the surgeon. We ought to know more, but certainly we know as much and that is the justification for a pediatrician who has seen probably a thousand of such cases, speaking on the subject.

Probably there is no disease that we know more about than appendicitis; we know its pathology and we know what delay will do. There are statistics that the mortality from appendicitis has not decreased but is somewhat higher than it used to be. Why? There are five reasons for this high mortality:

(1) In children the onset of appendicitis is insignificant. It does not produce much fever and rarely much pain. The mother is apt to think of the seriousness of the child's illness in terms of fever or pain. That is what makes appendicitis, like diphtheria, serious.

(2) There is abdominal pain and vomiting and that suggests something in the gastro-intestinal tract; the mother gives a mild cathartic and then another cathartic, and children often have had several cathartics before they come to the doctor. It is an old story that cathartics are all bad; we should, in season and out, tell mothers every time we see them that above everything else, when the child has pain in the abdomen, DO NOT give a cathartic. There is another phase to this point; not only is the cathartic bad, but it delays the time for favorable operation. It is well known that appendicitis should be operated early, but by the time we wait for the cathartic to act, much time has passed. Tell the people, if there is pain in the abdomen, call the doctor, but even more if there is tenderness.

(3) The entirely erroneous idea that every case of appendicitis should be operated on as soon as seen. I refer to a limited number of cases in which that is not true.

(4) Have no axe to grind, but there was a time when appendicitis was considered something that only an experienced surgeon should handle, and it is still a condition that not everyone can operate upon. The bars have been let down and every doctor thinks he can operate on appendicitis. It is still a serious operation.

(5) · It is not easy to diagnose. If you see only one or two a year, especially after they have had cathartics, it is easy; but if you see many in a year you become impressed with the fact that the diagnosis is a difficult thing.

What causes appendicitis? There are two main lines of thought, and both are right. It is rather interesting that we pediatricians and general practitioners practically never see an appendicitis with enteritis or dysentery or typhoid, where we have conditions favorable for extension from the bowel lumen. So this does not account for all of them. I am convinced that appendicitis is a complication of some other sickness, such as upper respiratory infection, scarlet fever, measles, and so forth. Pediatricians have talked about that a great deal, but you cannot expect a surgeon to look into the throat. A surgeon recently reported many cases where had been a preceding respiratory infection. There is a good reason why tonsilitis should be followed by appendicitis. They both have lymphoid tissue and whatever one may think about Rosenow's teaching, there is something in the idea of selectivity of tissue. The appendicitis has been spoken of as abdominal angina. Out at Northwestern, where every student has to report every case, we reported eight times as many appendicitis cases during grippe infections as during the interims. Some workers a few years ago took culture from throat of tonsil case and injected it into rabbit and the rabbit had appendicitis—which is suggestive. This is probably why we sometimes have epidemics of appendicitis. That has been described in small towns, where there would be 20 cases in a small town of 10,000. It is probable that some epidemic went through the town and infected the appendix. Recalls one case where a child came into the hospital and five children in that ward had appendicitis the next week.

The appendix is a small thing and on the surface it would not cause much disturbance, but it is in a bad location. Usually there is little fever and relatively little pain. Have seen two cases with so much pain that I thought they probably did not have appendicitis, but they did. They have very little fever. If they have fever to 104-5 and pain in the lower right quadrant, rather lean away from appendicitis. Saw a child coming out of a convulsion, fever 105.5, almost unconscious, and when pressure over the region of McBurney's, cried out. I told the doctor he had better watch that region. The next day he was better, fever was down, but the tenderness in the LRQ was still there. Two days later came in with ruptured appendix. However, when the fever is high, usually there is something else. They nearly all vomit; surgeons lay great stress on that, more than we do because we see children vomiting so often. A few do not vomit, but they usually do. The white count runs 15,000 or up, though have seen them under 10,000. This helps if you are in doubt, and especially if you make frequent counts; if it goes up, watch out.

Pain usually starts, as in the adult, around the umbilicus and then down to the LRQ. Far more important than pain is tenderness. This always means something and it is at the point of maximum involvement. Widespread tenderness is not so likely to be appendicitis, but may be led astray in this. The rule is that the maximum tenderness is at the point of maximum inflammation. It can extend down, or back or to the left. Recalls two cases where it was on the left side; one was in a case of situs inversus; in the other the appendix extended across the midline and the point of maximum tenderness was across the midline. Rebound tenderness is stressed a good deal, where you get tenderness in the abdominal wall.

Rigidity is not necessary for diagnosis, in early appendicitis. When you get a boardlike rigidity, you probably have peritonitis.

Rectal examination is of doubtful value; personally have not ordinarily done it; it is unpleasant and painful to the child and usually can get the necessary information without rectal examination; occasionally it is of value. Do not keep punching or poking and saying "Does this hurt?" Watch the child and see whether he squirms or twists his face or says "ouch; you can tell that way. We rarely see in children the vague funny pains that adults have; children usually tell straight stories.

The usual course of appendicitis in children is that they run for a day or two before they rupture; not frequently fulminating. However, they can rupture in 10 or 12 hours, though this is rare.

If appendicitis runs on a day or two what happens: (1) It may subside and get well; if we will recall the number of people who have had one or two attacks of appendicitis, we

know that the percentage of cases which subside and get well is high. (2) May rupture with spreading peritonitis. (3) Either with or without rupture, may form localized peritonitis with circumscribed mass. (4) Chronic appendicitis —in the sense that that inflammation persists over a long period of time.

Treatment: We all agree that the early case should be operated upon. In the case of rupture and spreading peritonitis, if we definitely establish that he had appendicitis and now has peritonitis, one should operate. If the appendix can be removed without too much trouble, do so; if not, leave it. The question whether to drain or not has been partly solved by the sulfonamides. Have seen many surgeons close the peritoneum. If the appendix is not removed, that leaves a foreign body there and under those conditions, it should be drained. Now, after the appendix is removed, if one sprinkles some of the sulfonamide drugs into the peritoneal cavity, one can rest more comfortably than formerly. If there is an appendiceal mass, whether from rupture or not, in the LRQ, say at the end of the 2nd to 4th day, hold with those who think better not to operate. Have pursued that policy for many years and cannot recall a case that we have ever regretted treating this way. Even at the end of the second day, if it looks like it will be walled off, it is better to wait.

What do we do after that? If a person has had that much appendicitis, he will have another attack, which may come in two months, or one month, or even less. You can tell the mother that there will be another attack and the child should be operated on immediately, when this comes. If the attack does not come, probably a month, six weeks or two months is good time to have appendix taken out; surgeons have different ideas about that.

Differential Diagnosis: It is difficult to make a diagnosis of appendicitis in children. There are many more abdominal pains that are not due to appendicitis than those that are. This is a fertile field for the allergist, but I am not able to discuss allergy in the digestive tract.

Pneumonia and pleurisy often come up for diagnosis. The pain of pneumonia is often below the diaphragm. Only those who practiced before the sulfonamide period really know anything about pneumonia; you younger fellows will never know what pneumonia is. If the pneumonia runs 24 hours, you frequently can make the diagnosis only by x-ray. In the days of real pneumonia, we would look the child over and conclude that he has pneumonia and then we would feel tenderness in the LRQ. It almost never is as far down nor as far back as the pain that comes with appendicitis, but it can be in that region. Sometimes pain of pleurisy is referred to the shoulder, depending on where the lesion is; it may run along the intercostal or phrenic. X-ray will often, but not always, reveal early pneumonia.

Gallstones or renal colic rarely enter into the problem of differential diagnosis.

Spastic colon; my experience with spastic colon is nil. Have always considered this to be a prerogative of the adult; have never seen it in a child.

Pyuria; appendicitis and pyuria, both from upper respiratory infection often occur simultaneously. Occasionally there is a pyuria which closely resembles appendicitis, with pain for a long time and finally resulting in hydronephrosis. Intravenous pyelography will clear up the diagnosis. Fifteen years or more ago was impressed with the frequency of abdominal pain with upper respiratory infection. Then I wrote a paper on "Abdominal Pain and Throat Infection." Sometimes wish I had never written it. With an upper respiratory infection, frequently have pain in the abdomen; this may be of two types—either referred to the umbilicus as a rather sharp intermittent neuritic pain, or a pain which comes on later with tenderness over most of abdomen, and this latter was attributable to lymphatic adenitis. During the epidemic of 1919, in many of the autopsies of patients dying from flu, there was enormous development of the lymphatic glands in the abdomen. I think that at least fifty percent of the cases of appendicitis in children will be found to have had an antecedent upper respiratory infection.

In the differential diagnosis between appendicitis with peritonitis and primary peritonitis, both the history and palpation are valuable. If it is an older child he can tell you where the pain started; if too young, the mother can tell you. If there is considerable peritonitis and he still feels more tenderness over the LRQ one is justified in assuming that it is peritonitis which follows appendicitis. Spoke yesterday of inserting a needle for diagnosis, but there is no "always" in medicine. Recall a girl

who seemed to have appendicitis; mother refused operation; had resident get consent for us to stick a needle in; did this and got a lot of germs which smelled like appendiceal abscess; told mother we must operate or child would die. Mother still refused, and abscess finally ruptured and child got well, which proved to the mother that her maternal instinct was right.

Twisted ovarian pedicle; have only seen two and did not make diagnosis in either; in one the resident made the diagnosis; could feel a small tumor through rectum, white count was 70,000; resident who had just come from Heine's obstetrical service asked whether it might not be a twisted ovarian pedicle, because of the white count which goes very high in some cases; in the other case, the surgeon made the diagnosis by rectal palpation.

Thursday Afternoon, May 28

A Panel Discussion on Urology had been arranged by the Program Committee, which was to be conducted by Dr. Hinman of San Francisco, with the assistance of urologists and gynecologists of Phoenix and Tucson. Dr. Hinman developed an acute illness shortly before the meeting was scheduled and was unable to attend; however, he sent his paper which was read by Dr. Wm. G. Shultz of Tucson, with the lantern slides which were sent with the paper. The paper is being published, but without the illustrations.

The Panel Discussion included the following subjects and discussants:

"Tumors of the Testis" was discussed by Dr. M. D. Day of Phoenix.

"Carcinoma of the Prostate" was discussed by Dr. John W. Pennington of Phoenix.

"Renal Water Counter Balance" was discussed by Dr. C. N. Ploussard of Phoenix, with lantern slides.

"Uretero-Intestinal Implantation and Its Application in the Treatment of Carcinoma of the Bladder" was discussed by Dr. John W. Pennington.

"Simulation of Pelvic Symptoms to the Trigonitis Due to Trauma, Trichomonas, Leukoplakia, Pyogenic Infection with Urethritis" was discussed by Dr. Preston Brown of Phoenix.

Following the close of this panel discussion, a motion sound picture on "Modern Advances in Sex Hormone Therapy" was shown by the courtesy of the Parke Davis Research Laboratory.

In the evening of Thursday, May 28, the annual banquet and entertainment for members, guests, ladies and visitors was held at the Hassayampa Hotel, filling the dining room to overflowing. A most enjoyable evening, with Dr. James H. Allen as toastmaster.

Friday Forenoon, May 29

This General Session was given over to panel discussion on the eye, ear, nose and throat in general practice.

The first speaker was Dr. Wm. A. Boyce of Los Angeles whose general subject was "Some Things About the Eyes That Are of Interest to the General Practitioner." This talk was beautifully illustrated by drawings in color, and held the close attention of the audience. Summary of salient points of the talk follows:

The first point was an appeal to the doctors in general with regard to eye examinations; the ophthalmologist feels that the examination of the eye is a medical examination and should not be turned over to a non-medical examiner. There is no functional nervous disease in which the eyes do not come into question; you must always eliminate the eyes. When the patient complains of headaches or certain nervous symptoms, indigestion, pain in the neck or shoulders, and you have eliminated the things which you think might cause these, do not dismiss the patient and say "Go and have your eyes examined." The layman knows only one kind of eye man and that is the optician. You should select an ophthalmologist and send your patient directly to him for examination. The eye will be given a thorough examination and you will be surprised at the information we can get from examination of the fundus. After you have sent the patient, this ophthalmologist will write you a letter and may say that he has found no pathology, but has found enough refractive error to give these symptoms and he will keep the patient under observation until he has relieved the symptoms due to the eye. Refraction is a medical problem. All patients under 45 require a cycloplegic, to refract the eye properly. The eye is only a camera that makes a picture which is transmitted back to the brain and you see with the brain. We have two eyes because we take stereoscopic pictures and under 45 years you require a cycloplegic to get that

picture. The rays of light will focus behind or in front of the retina depending on myopia or hyperopia. The object of the ciliary muscle is to adjust the lens and make it thicker or thinner, to focus the light rays. To get an accurate refraction, you put a cycloplegic in the eye which paralyzes the motor nerve to the ciliary muscle which then cannot act on the lens which remains in one condition and you can add other lenses which will have the effect of making the lens thicker or thinner, until you get a correct focus. After 45, the nucleus of the lens has grown so large that the ciliary muscle cannot adjust the lens, and you have to use additional glasses to see close, but the cycloplegic is not then necessary. But it is still a medical problem on account of lens changes (cataract), deposits in the vitreous, choroiditis, retinitis from old foci of infection, and the development of glaucoma. It is a medical man's problem to find these things. The ophthalmologists often see people who have lost one eye, or are losing both eyes, by acting on the advice of friends and going to non-medical men who have not found these things. Also after 45 the eyes begin to develop hypertension changes. If you send a patient to the ophthalmologist and he does not report to you on these things, you should ask him. The ophthalmologist should always write you a letter and tell you the result of his examination. If there is a beginning cataract you should know it, because these come from a focus of infection. If he is developing glaucoma you certainly should know it. If he shows the effects of hypertension in the retina, this may be the first evidence, before you find it anywhere else.

Dr. Boyce then showed colored drawings illustrating the following conditions. He commented briefly on them.

(1) Arcus Senilis.

(2) Chalazion.

(3) Conjunctivitis; do not overtreat or use too strong medicines that will irritate. Give it time and it will get well of its own accord. However, the patient with an inflammed eye is not satisfied unless he is doing something. Some mild colloidal silver preparation like silvol will coagulate the mucus and allow the tears to wash away the pus. Instruct the patient how to put it in his own eyes and apply it every hour. Use ice instead of heat and apply it 20 minutes out of each hour. Ice slows down bacterial growth, while heat simply makes an incubator. When conjunctivitis becomes chronic, they are more difficult; often a 2% mercurochrome solution put in every hour or two will cure them. If not resort to copper stick once or twice a week. If there is ciliary injection this means something more serious.

(4) Vernal Conjunctivitis; know very little about it. The less you do for it the better they are. A plain wash of some kind is the best thing. It is probably an allergy, but we do not know the cause of it.

(5) Ectropion; cannot cure by treating; requires surgery and the earlier the better.

(6) Entropion; turning in of the lids bringing the lashes against the eye. Found in nervous people and children. It is only temporary and frequently just a strip of adhesive to pull the lid out is all that is required. In an older case may be necessary to make a little incision.

(7) Blepharitis; inflammation of the lips, either ulcerative or non-ulcerative. Non-ulcerative type due to eczema, allergy or refractive error. Uulcerative type not so simple. Soften up the area and then apply 5% sulfathiazole ointment which will usually cure them; of course must correct the refractive errors.

(8) Dermatitis of the lids.

(9) Lachrymal apparatus. Sometimes have a congenital occlusion of the tear duct, which will need to be operated on. Teach the mother to milk the material out of the duct and if the pus continues to come back into the eye, push a probe through the obstructing membrane at the lower end of the duct, which is where it usually fails to open. A lachrymal fistula may result if allowed to go on.

(10) Dacryocystitis; very likely to diagnose it as an erysipelas. Requires surgery under general anesthesia; local is not effective as patient must be quiet. Incision down to the bone to be sure of getting the sac. Be sure to get the pus and obliterate the sac by wiping with trichloracetic acid every day with packing.

(11) Orbital abscess. Frequently due to insect bite. Wait until it localizes, using hot applications; then drain with a wide incision; sometimes ethmoiditis will break into the orbit and form abscess; do not be in a hurry; let it localize and then incise.

(12) Subconjunctival hemorrhage. Due to breaking of small blood vessel; usually does

not amount to anything, but always excites the patient. In people past middle life, it calls for physical examination to see if they have hardening of the artieries.

(13) Gonorrheal Ophthalmia. Not seen so often now, but may occasionally have a case, especially where midwives are allowed. Used to figure on losing sight in 25% of children and 50% of adults with this condition. With sulfonamides, do not fear gonorrhea any more and should not lose the eye. Make an emulsion of sulfonamide so that it contains ¾ grain per pound of body weight per day, given in the food, so that it will keep up a concentration for five or six days. In a few days the edema subsides and the eye begins to assume its normal color again. Must have these cases in a hospital under nurse's care because the eye must be bathed and irrigated to prevent corneal ulceration. Adults is treated the same way.

(14) Panophthalmitis. Cannot save the eye. Probably evisceration is better than enucleation.

(15) Follicular conjunctivitis; Trachoma. Large doses of Vitamin A and sulfonamide (1/3 grain per pound per day over a period of about three weeks) cures practically all cases of trachoma.

(16) Sequellae of trachoma. Trichosis; split the lid and take out the hair bearing margin. Pannus; as long as it has blood vessels the trachoma is active; when the trachoma is cured by sulfanilamide the pannus will disappear.

(17) Burns of conjunctiva; problem is to prevent adhesion; no good way to do this; keep ointment on and with glass rod break adhesions to see if burn will not gradually heal; if not and you get an adhesion symblepharon, it is not so simple.

(18) Phlyctenular conjunctivitis and Pannus. Always thought to be tuberculous in origin; if they are, they will usually clear up on the proper treatment. More serious on the cornea because of the scarring which may cover the cornea and interfere with vision. Put them on general treatment for tuberculosis. Local treatment to the eye not necessary unless cornea is involved. Ulcers of the cornea; it is better for the general practitioner not to try to treat.

(19) Leucoma. Sometimes have injuries about the limbus with prolapsed iris. Do not try to replace the iris but cut it off. If you have to treat them, treat as if it were your own. You must kill the staphylococci. It is like any other ulceration except for its location. Anesthetize the eye thoroughly, wipe out all slough and cauterize thoroughly with trichloracetic or phenol. If it still stains with fluorescin, try it again. Can use caustic every day and if it still spreads use actual cautery. It is the ulceration which produces the scar and not the caustic; you limit the scar by cautery. Do not put anesthetic ointment in the eye and cover it up; better give the patient something to take; there is no such ointment that is not damaging to the eye. Do not depend on cocaine and other anesthetics in the eye; put in atropine and then apply a tight bandage to keep them from rubbing the eye.

(20) Hypopyon; occurs when an ulcer—usually pneumococci—erodes through the cornea; means that there is a malignant infection.

(21) Interstitial keratitis. So long as we have syphilis with us, we will be seeing this; may occur from three years to twenty years; usually hereditary; never forms ulcer, never stains. Eyes congested, photophobia; blood vessels come into the cornea; salmon bodies. Local treatment not necessary. Some cases have been treated by malaria injection; usually takes three months to a year before the eye clears and then frequently have scars. Cases treated with malaria have 12 to 14 chills and by the time chills are over the eyes are well. This is good treatment. Where can you get the malaria? Cannot tell you this. Los Angeles General Hospital keeps a strain going all the time. Have not had any case in the other eye when malaria was given.

(22) Dendritic keratitis. Fluorescin stains peculiar figures on the cornea which is insensitive. This reduces the vision and must be stopped. Evidently due to virus; frequently occurs in malaria. Anesthetize the eye with something other than cocaine and then paint the whole cornea with 7½% iodine; then 4% cocaine and then wipe the whole epithelium lining off the cornea; apply bland ointment and patch over the eye. They may recur due to iritis.

(23) Staphyloma from injury.

(24) Keratocornea.

(25) Keratoglobus; big eyes due to closure of canal of Schlemm. Goes blind by time child is three or four years old; get hold of the case

when three or four months old and can save the vision by operation.

(26) Pterygium. Due to irritation. No treatment needed until they begin to get over the cornea; they must be removed thoroughly if you wish to prevent recurrence. While they are of low grade malignancy they keep recurring.

(27) Corneal scar. Should admit some light to prevent eye from turning in.

(28) Iritis. Requires physical examination to determine what lies back of it—usually some focus of infection.

(29) Herpes. Frequently have herpes about the eye, and may be on the cornea. Try the blood injection treatment; ten c.c. of patient's own blood withdrawn and reinjected under the skin; every day for ten days. Diphtheria antitoxin has been used and is often effective; if it fails, try the blood injection.

Dr. Paul Case (Phoenix): Though this talk was primarily for general practitioners, the eye men can get much out of it. Simple blepharitis was mentioned; this often occurs with a seborrhea of the scalp which must be cleared up before you get permanent results. With regard to trachoma and sulfanilamide, many have wondered what would happen if we give some of the other sulfa derivatives. About two weeks ago, Dr. Forester, of the Indian Service, said that he had tried the other preparations and that sulfanilamide was the only one which is efficacious; we will save time if we do not experiment with other preparations. It might be emphasized that the general practitioner is the responsible factor in glaucoma. In the past year have seen two cases of acute glaucoma; one had been treated for 24 hours and the other for 72 hours for vomiting. The vomiting of glaucoma is severe and often is the dominant symptom. When you, as general practitioners, run into a case where you do not find a special reason for the vomiting, or if there is pain in the eye, take a look at the eye and see if there is a steamy cornea, or feel it and compare with your own eye. If there is glaucoma get him into the hands of an ophthalmologist immediately because urgent treatment is required.

Dr. Kibler: Why would not other forms of fever therapy be effective, instead of malaria? Answer: Probably they would, though more difficult to give. It is the fever and not the malaria that is effective.

Dr. A. J. Ridges of Salt Lake City then read a prepared address on "Headaches and Diseases of the Accessory Sinuses." Paper to be published in Southwestern Medicine.

Dr. O. W. Thoeny of Phoenix opened discussion: Two things mentioned are particularly interesting. Knows a patient with mild degree migraine; his grandfather had it, his father had it and one son has it; patient also has some allergy. Thinks connection between allergy and migraine is important. The second thing was the conservatism which it hoped the general practioners will take note of.

Dr. C. R. K. Swetnam was called to the chair to preside, and introduced Dr. Howard House of Los Angeles who read paper on "Diseases Related to the Ear." Paper to be published.

Dr. Jewel Smith of Phoenix opened discussion: He emphasized one or two things. Our summer is coming on, our swimming places will soon open, and we will have much external otitis or furunculosis. Do not incise these cases; they are primarily a cellulitis; incision is not satisfactory because you have to give general anesthetic and nothing will be accomplished. Tell the patients that they will have considerable pain, give codeine, empirin, hot packs and attempt to control them in this way. The thing most pleasing about Dr. House's paper was the great detail in explaining things; it is these little things that often make for success or failure in treatment; for example, in nasal shrinkage, giving the patient nose drops to be taken one or two several times a day is not enough. The tendency is to give too little and not often enough. Also thinks that nose drops of argyrol or neosilvol are superfluous. If you can get shrinkage that will accomplish the purpose for which you are giving the nose drops, either for sinus or middle ear infection. Once in a while see a case of argyria, usually not the fault of the doctor, but because the patient continues to use the argyrol or neosilvol long after leaving the doctor. If such preparations are prescribed, use a non-refillable prescription.

Dr. Swetnam: Would like to emphasize one point. The doctor spoke of doing a mastoid to prevent trouble. Do not know how many of you have to meet that situation, but I often do. Parents are afraid of doing any surgery for fear that it will impair the hearing. Fre-

quently see cases where they say the hearing is bad because of a mastoid operation, when, as a matter of fact, the impaired hearing is due to something else. In particularly, general practitioners, when you see a child with a running ear and you want to refer him to a specialist, emphasize the fact that operation is more likely to save the hearing than to impair it. Also the use of sulfonilamide; the older men do not know so much about that; do not know how many of you have had the misfortune to operate a case which has been treated too long with sulfonilamide, and you find on operating that the destruction is very extensive; the doctor's point about stopping after two weeks to see how it is getting along is a very good one.

Dr. Henry Running: How about the acute ear, say after a 12-hour period, temperature and pain is gone and there is still considerable bulging? Child is relieved and there is no pain or temperature, what harm can happen if ear is not opened? Also want to know about the use of spray in pediatrics. Sometimes putting drops in the nose, sitting on the child and clamping the nose makes it hard to convince the mother that you are not killing the child.

Dr. House: With regard to the first question; pain is the most important sign and if the pain is relieved after 12 hours of conservative treatment, regardless of whether you have a bulging ear or not, it is safe to let it subside spontaneously. You may have a catarrhal infection and the ear may bulge for two or three weeks and subside spontaneously; that is, unless you get an exacerbation and then it is acute. It is definitely dangerous to open that kind of ear because nature is taking care of it and you are inviting further infection. As to drops vs. spray—it is entirely a matter of personal choice. The most important thing is to put some drops in and wait until the front of the nose opens up.

Luncheon Meetings, Friday Noon, May 29

Two luncheon meetings were held. One was for the Eye, Ear, Nose and Throat group, at which the speakers were Drs. Henry S. Rogers, Howard P. House, Wm. A. Boyce and A. J. Ridges.

At the other luncheon, a Panel Discussion on Non-Tuberculous Infections in the Chest was conducted. Dr. Fred Holmes of Phoenix presided and the speakers were Dr. Leroy U. Gardner and Dr. Homer L. Sampson. This was an informal discussion from films supplied by Dr. Holmes.

Friday Afternoon, May 29

A Symposium on Silicosis was held, this having been arranged by the Committee on Industrial Health's Subcommittee on Silicosis. An elaborate exhibit on Silicosis occupied one end of the meeting hall, and mimeographed copies of the Subcommittee's preliminary report and descriptive guide to the exhibits was distributed.

The discussion leaders were Dr. Leroy E. Gardner of Saranac Lake, N. Y., followed by Dr. Don E. Cummings of Denver, Colo., with Dr. Homer Sampson of Saranac Lake closing.

This symposium brought the General Session to a close. The talks by these three discussants were from lantern slides, and this made it impossible to reproduce their remarks in any kind of order.

While this General Session was going on, the Eye, Ear, Nose and Throat Section was holding simultaneously, with Dr. C. R. K. Swetnam of Prescott presiding, and three papers were presented, as follows:

"The Nasopharynx" by Dr. A. J. Ridges of Salt Lake City.

"Surgical Procedures of Interest to the Otolaryngologist" by Dr. Howard P. House of Los Angeles.

"Anesthesia and Measures of Safety in Ophthalmic Operations" by Dr. Wm. A. Boyce, Los Angeles, Calif.

Friday Evening, May 29

A public Meeting closed this Convention, this being held in the High School Auditorium, and was a combination of motion pictures and brief talks—on Cancer, Tuberculosis and Immunization, the speakers being Dr. E. Payne Palmer of Phoenix, Dr. John W. Flinn of Prescott and Dr. Felix G. Manning of Phoenix.

Scientific Exhibits

Four very excellent scientific exhibits were an important part of the general scientific program, as follows:

"Treatment of Fractures in Children" was the title of an excellent exhibit by Dr. Louis W. Breck and Dr. Compere Basom of El Paso, this being presided over by Dr. Breck. The exhibit presented various problems which come up in the treatment of fractures in children and stressed particularly the importance of conservative rather than operative treat-

ment. The exhibit included models, photographs and x-ray reproductions.

"Silicosis and Lung Diseases Resembling Silicosis" exhibited by the Subcommittee on Silicosis of the Arizona State Medical Association, filled three large viewing boxes, with about eighty large chest films. The films were loaned by members of the Committee and others. This exhibit has been reduced to lantern slides and is available for any use to which county society groups may want to put it.

"Exhibit on Heart Diseases" by Dr. Chas. S. Kibler of Tucson was located in the lobby of the Hassayampa Hotel and attracted a constant stream of interested observers. Dr. Kibler spent much time there explaining the various charts, photographs, x-ray films and other data.

"Exhibits on Cancer" was supplied by Dr. E. Payne Palmer, Sr., and Dr. E. Payne Palmer, Jr., showing many charts and diagrams to illustrate the advances being made and problems facing the medical profession in the fight on cancer.

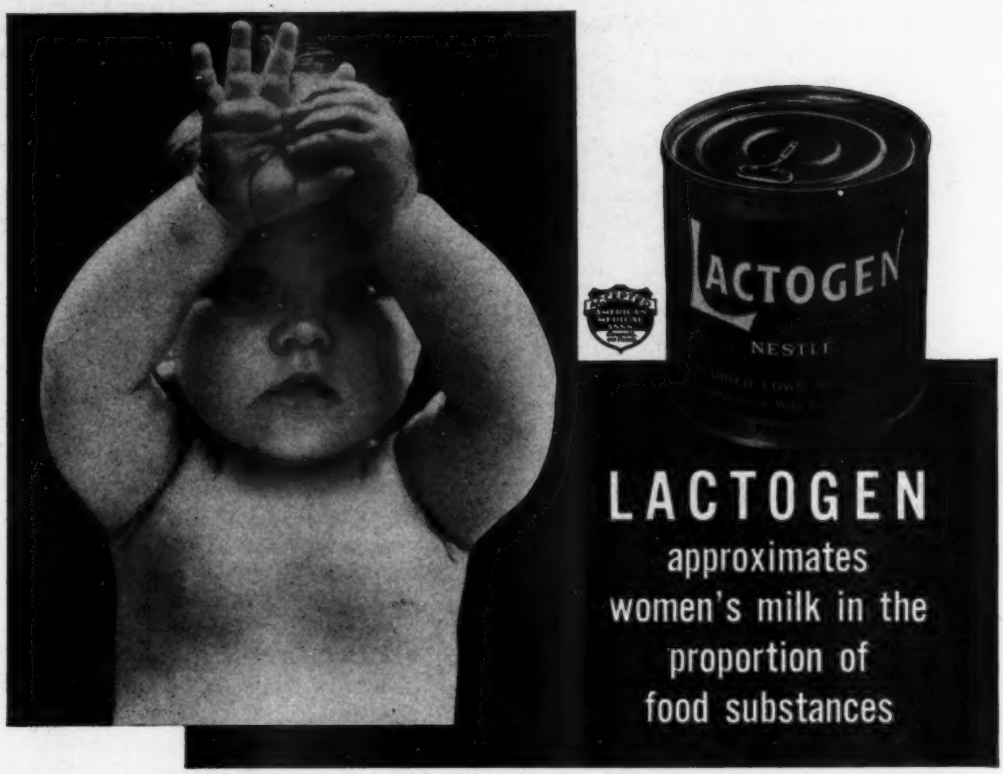
—Reported by W. W. Watkins, M. D.

MISCELLANY

MANIFESTATIONS OF CLINICAL ALLERGY

(Types of Allergy responsible according to probable frequency)

1. Bronchial asthma, allergic bronchitis, and croup
   (a) foods (b) inhalants (c) drugs (d) bacteria.
2. Nasal Allergy (hay fever)
   (a) *seasonal* (1) pollen (2) animal emanations (3) dusts (4) orris root, pyrethrum, kapok, cottonseed, silk, etc. (5) foods (6) bacteria.
   (b) *perennial* (1) animal emanations and dusts (2) foods (3) orris root, pyrethrum, kapok, cottonseed, silk, etc. (4) bacteria.
3. Atopic Dermatitis (due to blood borne allergens)
   (a) foods (b) pollens (c) animal emanations including silk (d) orris, pyrethrum, kapok, cottonseed, etc. (e) house and other dusts (f) infectants—fungi, bacteria.
4. Urticaria (superficial skin capillaries are shock tissues)
   (a) foods (b) drugs (c) bacteria (d) inhalants (e) parasites (f) physical allergy.
5. Angioneurotic Edema (deeper blood vessels of skin are shock tissues) (causes under No. 4)
6. Contact Eczema (epidermal cells are sensitized)
   (a) contactants of all types responsible (b) the patch and not the urticarial immediate type of skin reaction occurs.
7. Acne—Possible allergic etiology? Abnormal fat metabolism more important.
   (a) foods (b) inhalants (c) drugs—including halogens (d) infectant allergies (?)
8. Migraine, sick headaches, cyclic vomiting, and recurrent bilious attacks
   (a) food (b) bacteria (c) inhalants. Recurrent peripheral neuralgia and paresis and idiopathic epilepsy at times due to allergy.
9. Gastrointestinal allergy (canker sores, oral and pharyngeal inflammation, distention, pyrosis, nausea, vomiting, abdominal cramping and pain, diarrhea, constipation)
   (a) foods (b) drugs (c) bacteria and parasites (d) inhalants.
10. Ocular—seasonal and perennial conjunctivitis, recurrent iritis and corneal ulcers, blepharitis, ocular and orbital pain. (See migraine)
    Inhalants and foods are most important and vary according to the manifestation. Drug and bacterial allergy are also important.
11. Miscellaneous
    (a) cardiovascular (1) susceptibility to transient cardiac irregularities (?) (2) periarteritis nodosa (?) (3) erythema nodosum and multiforme (4) glomerulonephritis (?) (5) hypertension (occasional case)
       (a) foods and drugs (b) bacteria (c) inhalants (?).
    (b) arthropathies (1) possible role of food and bacterial allergy in rheumatoid arthritis (2) intermittent hydrathrosis
    (c) urogenital (1) allergic cystitis (2) spasm in ureter and bladder (3) Hun-



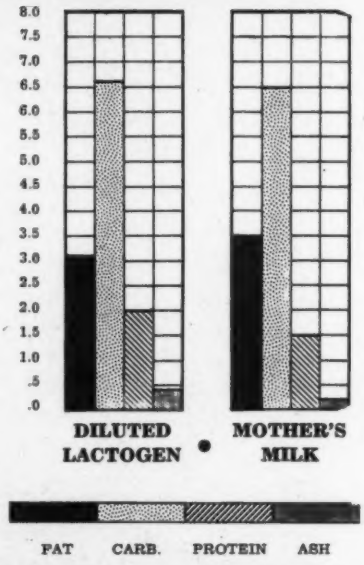
LACTOGEN
approximates
women's milk in the
proportion of
food substances

THE cows' milk used for Lactogen is scientifically modified for infant feeding. This modification is effected by the addition of milk fat and milk sugar in definite proportions. When Lactogen is properly diluted with water it results in a formula containing the food substances—fat, carbohydrate, protein, and ash —in approximately the same proportion as they exist in women's milk.

No advertising or feeding directions, except to physicians. For free samples and literature, send your professional blank to "Lactogen Dept." Nestlé's Milk Products, Inc. 155 E. 44th St., New York, N. Y.

My own belief is, as already stated, that the average well baby thrives best on artificial foods in which the relations of the fat, sugar, and protein in the mixture are similar to those in human milk."

John Lovett Morse, A.M., M.D.
Clinical Pediatrics, p. 156



NESTLÉ'S MILK PRODUCTS, INC.
155 EAST 44TH ST., NEW YORK, N. Y.

ner's ulcers (?) (4) vulval canker-like lesions and inflammation
(a) foods (b) drugs (c) bacteria (d) inhalants.
(d) allergic toxemia
(a) foods (b) pollen.
(e) allergic purpura, agranulocytosis
(a) drugs (b) foods (c) bacteria (?)
(f) unexplained fever
(a) foods (b) inhalants (c) drugs (d) infectant allergies.

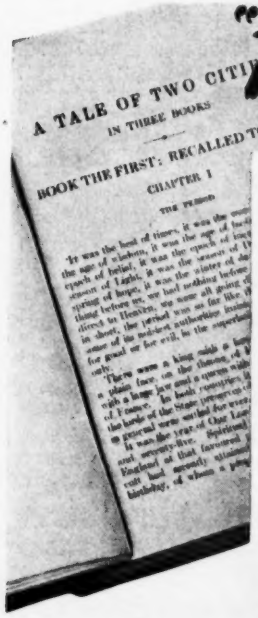
—*Journal-Lancet.*

GILDING THE LILY

It is an attractive thought that we have entered a new era in Medicine—such is dramatically shown by the illustrations in the various women's magazines heading articles on Modern Medical Miracles, wherein young Dr. Kildare peers into the distance with eyes, hawk-like, seeing only *The Pure Truth.*

We laugh at the old story of the Scotchman who was told that one pill would fix him up—thereupon he took five so that the job would be done that much more expeditiously and completely. Yet it is not infrequent that Mrs. Obstetrical Case walks out of her physician's office with prescriptions requiring five separate pills packed with dynamic fulfillments of her various special needs. Her bag rattles with these magic pellets as she leaves the pharmacy.

If we exclude cases of obvious dietary deficiencies, the average American diet is sufficient for the needs of pregnancy in all but one or at most two vitamins—a lack felt most during the long winter months. Energy, protein, mineral, fluid, and vitamin requirements are satisfied to an astonishing degree, various studies have suggested. Vitamin D. is the only consistently deficient factor in the daily diet, and even this can be returned to satisfactory levels by adequate sunlight converting the skin oils. Vitamin A rarely needs supplementary measures. Adequate calcium is supplied by increasing the patient's milk intake by a pint to a quart daily in the latter half of pregnancy. The dental profession has not been able to demonstrate conclusively that calcium deficiency is the cause of caries so frequently associated with pregnancy. Excess calcium ingested is lost through the feces.



"Recalled to Life"

LIKE a call to renewed life for the pernicious anemia patient, come the latest developments in liver therapy. . . . For intramuscular injection, Smith-Dorsey has prepared a U. S. P. Purified Solution of Liver containing all the fraction G (Cohn) of the liver extract. Rigidly standardized . . . twice tested by animal injection to prevent local tissue reaction . . . sealed in ampoules and vials . . . finally tested for sterility —Smith-Dorsey offers a product to which physicians can turn with confidence.

Supplied in 1 cc. ampoules and 10 cc. and 30 cc. ampoule vials, each containing 10 U. S. P. Injectable Units per cc.

PURIFIED SOLUTION of LIVER

SMITH - DORSEY

The Smith - Dorsey Company

LINCOLN ✦ NEBRASKA

Manufacturers of Pharmaceuticals to the Medical Profession since 1908

Please mention SOUTHWESTERN MEDICINE when answering advertisements

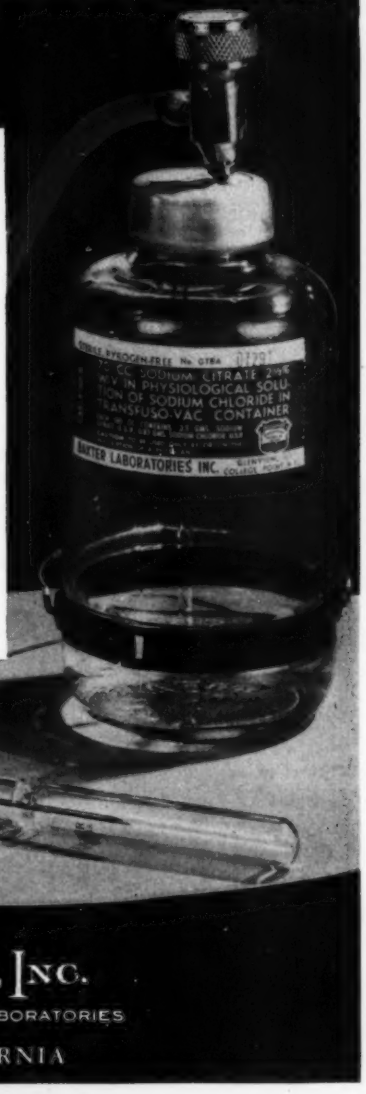
Milestones in Medical History

4

1939

THE *Baxter* TRANSFUSO-VAC

THE ORIGINAL CLOSED TRANSFUSION TECHNIQUE



Safety Through Unbroken Asepsis

was Baxter's contribution to transfusion therapy in 1939. The Baxter Transfuso-Vac and Transfuso Donor Set made possible an indirect blood transfusion method based upon collection under vacuum, storage under vacuum, and unbroken asepsis during infusion . . . incorporated into such a simple technique that one operator can perform the entire transfusion, from collection through infusion.

Hazards which occur in less competent procedures are eliminated because blood-drawing, citrating, filtering, and infusing are all done with the same container and its accessories. Asepsis remains *unbroken* through every step.

The Baxter Transfuso-Vac gives maximum speed, convenience, cleanliness, economy to your transfusion technique ★ *Of greater importance is the safety this completely closed, vacuum-protected equipment insures.*

PRODUCT OF

DON BAXTER, INC.

RESEARCH AND PRODUCTION LABORATORIES

GLENDALE, CALIFORNIA

DISTRIBUTORS:

The C. A. Bischoff Surgical Co. . . . . *Oakland*
The Denver Fire Clay Co. . *Denver-Salt Lake City-El Paso*
Great Falls Drug Co. . . . . *Great Falls*
McKesson & Robbins . . . . . *Billings*
Missoula Drug Company . . . . . *Missoula*
Ohio Chemical & Manufacturing Co. . . . . *San Francisco*
Shaw Supply Co., Inc. . . . . *Tacoma-Seattle*
Shaw Surgical Co. . . . . *Portland*
Southwestern Surgical Supply Co. . . . . *Phoenix*
Spokane Surgical Supply Company . . . . . *Spokane*

The iron requirement is satisfied by moderate ingestion of green vegetables and milk. Often addiction of iron to the diet will serve only to emphasize the capricious gastrointestinal problems of pregnancy, either increasing or retarding motility. Even small dosages of iron will color the feces as evidence of unnecessary ingestion. The physiological hemodilution of late pregnancy makes it extremely difficult to attain nonpregnant hemoglobin levels, despite heavy therapy with "anti-amenic regimes."

Subclinical or asymptomatic vitamin deficiencies have been described throughout the literature. Our information is as yet too scanty to give absolute credence to many of these reports. Certainly there is no consistently positive clinical evidence outside of the laboratory animal of the need for vitamin E in the pregnant human female. Nor is there evidence demanding more than the morning glass of orange juice.

Calculating the cost of the average adjunctive therapy given to many obstetrical patients for these deficiencies in their diets costs from 12 to 18 cents a day, when these various agents are supplied in the advocated doses. Actually, an increased supply of vitamin D (which crude form usually contains as well sufficient vitamin A) can be procured for the cost of one cent a day.

If the physician is impressed with the fetal needs, one may point out the oft-observed fact that a mother dying of starvation will bear an ostensibly normal child, in good health, purchased at the cost of her own nutrition. We all are familiar with the too-rapidly-pregnant, too-young grand multipara whose snaggled teeth, overstretched tissues, and hopeless demeanor confounds us in our clinics and charity work. Yes, these patients often show dietary deficiencies (as do their husbands and children), but the drain of pregnancy is far greater than any which can be blamed upon the simple deficiency. More rational therapy is directed to ward prevention of too-rapid pregnancies rather than toward the dietary lack alone. Indeed, financing these patients to a superabundance of vitamins and minerals often is more difficult than prophylaxis.

Yes, there is tremendous drive in the present vitamin knowledge. However, gilding the lily

MEDICAL DEPARTMENT
CORN PRODUCTS REFINING CO.
17 Battery Place, New York, N. Y.

℞

Note:
The chemical compositions of Blue Label Karo and Red Label Karo are fundamentally the same. Their caloric values are identical.
Consequently Blue or Red Label Karo may be prescribed with safety in any formula.

Free to Physicians

"Infant Feeding Manual For Physicians" is a concise, helpful monograph containing specific information and tested Karo feeding formulas. Sent postpaid. Write to address above.

To help relieve neuritic symptoms of pregnancy

MEAD'S BREWERS YEAST

is proving of increasing value as a routine part of the patient's diet in treating such symptoms as nausea, vomiting, dyspnea, pains in legs and arms, muscle weakness and fatigue.

In one series, it was found that the physical, mental and emotional status of 120 pregnant and lactating women receiving Mead's Brewers Yeast and other foods rich in vitamin B was superior to that of a control group of 116 women.

Mead's Brewers Yeast contains the entire vitamin B complex, including thiamine, riboflavin and nicotinic acid. It may be given in tablet form and/or in powder form. The powder may be quickly shaken up with milk in an ordinary cocktail shaker. It also mixes well with tomato juice or ketchup.

Each Mead's Brewers Yeast Tablet contains not less than .06 mg. thiamine (vitamin B_1), .02 mg. riboflavin (vitamin G), and .15 mg. nicotinic acid, together with other factors of the vitamin B complex commonly occurring in nonviable brewers' yeast.

Mead Johnson & Co., Evansville, Ind., U.S.A.

has been since Biblical times a very human failing.—*West. J. S. O. & G.*

FEVER CHEMOTHERAPY

1. After a decade of rich and constantly enlarging experience with physically-induced artificial fever therapy, the successful results achieved by many workers in many lands are sufficiently comparable to justify the categoric statement that artificial fever therapy is at least as effective as malaria therapy in the management of symptomatic or asymptomatic neurosyphilis. In the hands of many reliable investigators artificial fever therapy has yielded significantly superior results. Patients who have not responded well to malaria therapy have been benefited by subsequent artificial fever therapy.

2. There is unmistakable evidence that the extent of clinical improvement in neurosyphilitic patients is related directly to the height and the duration of fever. The thoroughly documented analyses made by statisticians of the U. S. Public Health Service provide proof that the clinical responses were distinctly inferior when relatively low temperature levels were employed. There is no longer any valid reason to assume that the malaria plasmodium exerts any specific effect upon Spirochaeta pallida.

3. Several investigators who have had long experience with malaria therapy and with artificial fever therapy have abandoned malaria therapy in favor of artificial fever therapy. This decision was determined largely by the observations that patients tolerate artificial fever therapy more readily, that a high proportion of neurosyphilitic patients can be treated with artificial fever on an ambulatory basis without interruption of gainful employment, and that treatment complications are minimized with artificial fever therapy.

4. Since continuous hospitalization is not a requirement for the artificial fever treatment of most neurosyphilitic patients, the cost of the treatment is not necessarily greater than with malaria therapy. If the patient remains at his regular employment during the course of artificial fever treatments, the cost is usually much less.

5. The employment of auxiliary chemotherapy in conjunction with any type of fever therapy is an essential requirement. There is

Pause at the familiar red cooler for ice-cold Coca-Cola. Its life, sparkle and delicious taste will give you the real meaning of *refreshment.*

Please mention SOUTHWESTERN MEDICINE when answering advertisements

"WHAT ARE THE MAGIC WORDS?"

No magic words, no magic wand can improve a cigarette. *Something more tangible is needed.*

PHILIP MORRIS superiority is due to a different method of manufacture, which produces a cigarette *proved* definitely less irritating to the smoker's nose and throat.*

Perhaps you prefer to make your *own* tests. Many doctors do. And may we add, *those* are the doctors who become PHILIP MORRIS' staunchest friends.

PHILIP MORRIS

PHILIP MORRIS & CO., LTD., INC.
119 FIFTH AVENUE, N. Y.

* *Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154*
Laryngoscope, Jan. 1937, Vol. XLVII, No. 1, 58-60

TO PHYSICIANS WHO SMOKE A PIPE: We suggest an unusually fine new blend—COUNTRY DOCTOR PIPE MIXTURE. Made by the same process as used in the manufacture of Philip Morris Cigarettes.

evidence that the concurrent use of chemotherapy with artificial fever therapy increases the therapeutic effectiveness of both agencies.

6. The hazards inherent in the various physical modalities used for the production of artificial fever during the first few years of the undertaking have been largely eliminated. Recognition of the physiologic changes produced by fever has led to the utilization of means to combat such effects. A procedure which was looked upon as a technical feat a decade ago may now be applied by skilled workers with a frequency which approaches routine.

7. Developments of the past few years have demonstrated that equally favorable clinical and serologic results may be obtained with fewer total hours of artificial fever therapy, applied in shorter individual sessions at more frequent intervals. This practice permits the treatment of more patients at less cost.

8. The excellent results following the use of combined fever-chemotherapy in cases of asymptomatic neurosyphilis indicate that the patients' best interests are served by the prompt administration of this form of treatment.—*Ohio St. Med. J.*

BOOK NOTES

L. O. DUTTON, M. D.
(Book Review Editor)
Mills Bldg., El Paso, Texas

A TEXTBOOK OF GYNECOLOGY: By Arthur Hale Curtis, M. D. Professor and Chairman of the Department of Obstetrics and Gynecology, Northwestern Univ. Medical School; Chief of the Gynecological, Service, Passavant Memorial Hospital, Chicago. Fourth Edition. 723 pages with 401 illustrations. W. B. Saunders Co. 1942. $8.00.

The fourth edition of this excellent book needs little in the way of comment other than added praise. There are many changes in the text from the older edition, all for the betterment. There is improvement in the discussion of pelvic anatomy and much has been added in a discussion of pathology of uterine myomata.

The most important change in the volume is in the discussion of ovarian tumors. This has been entirely re-written and is of extreme value. Likewise, the chapters on gonorrhea have been almost entirely re-written in the light of modern therapeutic procedures. The volume contains 723 pages and is an excellent example of the book-maker's art. It can be recommended without reservation.—*L. O. Dutton.*

TURNER'S CLINICAL AND X-RAY LABORATORIES

FIRST NATIONAL BANK BUILDING

EL PASO, TEXAS

CLINICAL PATHOLOGY

X-RAY DIAGNOSIS

X-RAY THERAPY

RADIUM THERAPY

GEORGE TURNER, M. D. DELPHIN von BRIESEN, M. D.

Please mention SOUTHWESTERN MEDICINE when answering advertisements

SYNOPSIS OF PATHOLOGY, By W. A. D. Anderson, M. A., M. D. Assistant Professor of Pathology, St Louis University School of Medicine; Pathologist, St. Mary's Group of Hospitals. C. V. Mosby Co., 1942. $6.00.

This excellent volume of 638 pages is exactly what is indicated by its title. The discussion of each pathological entity is clear, concise and condensed to the point of the presentation of only the immediately useful outline that the general man might wish to consult without having to pour through the wealth of detail that is customary in the useful textbook of pathology.

There is a wealth of illustration, mainly of growth pathology, and a number of excellent color reproductions. The material covered is broad, and on the whole, this constitutes a quite comprehensive review source for the busy reader who wishes to quickly get the essential pathological features of most of the common disease states.—*L. O. Dutton.*

TREATMENT IN GENERAL PRACTICE (Fourth Edition). By Harry Beckman, M. D., Professor of Pharmacology, Marquette University School of Medicine Milwaukee, Wisconsin. 1015 pages. W. B. Saunders Co. Philadelphia & London. Price $10.00.

The fourth edition of this excellent text contains a wealth of new material considered in the same level-headed manner that the author has used previously. Each entity is discussed in fair detail, but the emphasis is always placed on therapeusis. In most instances the author is inclined to be conservative, but there is no lack of detail, even though broad therapeutic principles are well considered.

The author's style is inimitable and he manages to inject a freshness of viewpoint with occasional dashes of humor that make the reading of this scientific text a delight. This book should certainly be in the hands of all doing general practice, and the specialists will find much of value therein. The volume is of excellent workmanship.—*L. O. Dutton.*

THE CARE OF THE AGED (GERIATRICS) By Malford W. Thewlis, M. D. Attending Specialist, General Medicine, United States Public Health Hospitals, New York City; Attending Physician, South County Hospital, Wakefield, R. I.; Special Consultant, Rhode Island Dept. of Public Health. The C. V. Mosby Co. St. Louis, 1942.

The fourth edition of this valuable book is an indication of its usefulness. In spite of so quickly following the third edition, the book contains many valuable changes and additions. Respira-

Effective, Convenient and Economical

THE effectiveness of Mercurochrome has been demonstrated by twenty years' extensive clinical use.

For the convenience of physicians Mercurochrome is supplied in four forms—Aqueous Solution for the treatment of wounds, Surgical Solution for preoperative skin disinfection, Tablets and Powder from which solutions of any desired concentration may readily be prepared.

Mercurochrome

(H. W. & D. Brand of dibrom-oxymercuri-fluorescein-sodium)

is economical because solutions may be dispensed at low cost. Stock solutions keep indefinitely.

Mercurochrome is accepted by the Council on Pharmacy and Chemistry of the American Medical Association.

Literature furnished on request

HYNSON, WESTCOTT & DUNNING, INC.

BALTIMORE, MARYLAND

'You Can Get It from Park Bishop'

SURGICAL SUPPLY ITEMS

From A to Z

AMPOULES TO ZIPPER CASES

Mail Orders Solicited

Park Bishop Co.

SURGICAL SUPPLY

414 N. Stanton St. El Paso, Texas

Distributors for

Endo Products, Inc.

tory infections, liver function, blood transfusion, and clinical deysimetry, surgical application of chemotherapy, a discussion of fractures, anesthesia, and statistical charts of 1940 are of importance.

The general make-up of the book is the same as that of the previous edition. Discussed are general problems of old age and pathological conditions peculiar to old age, as well as a number of miscellaneous problems dealing with the aged.

In this day of increasing age of the population, such a volume is a valuable addition to any practitioner's library, as our proportion of elderly patients is steadily inceasing. The book contains 589 pages, is well organized and of excellent typogaphy.—*L. O. Dutton.*

STANDARD NOMENCLATURE OF DISEASE AND STANDARD NOMENCLATURE OF OPERATIONS. Edited by Edwin P. Jordan. M. D. 1022 pp. $4. American Medical Association, Chicago, 1942.

This book is most useful to hospitals, and if widely adopted, would help standardize nomenclature to a desirable degree. Medical schools might do well to introduce all undergraduate students to this volume.—*M. P. S.*

Military Surgical Manuals Volume II — OPHTHALMOLOGY AND OTOLARYNGOLOGY: Prepared and Edited by the Subcommittees on Ophthalmology and Otolaryngology of the Committee on Surgery of the Division of Medical Sciences of the National Research Council. 331 pages with 124 illustrations. Philadelphia and London: W. B. Saunders Company, 1942. Price $4.00.

This is the second in a projected series of manuals for the medical officer in the armed services.

Like its predecessor, this volume is short, sweet and to the point. No windy passages of maybes, ifs and on-the-other-hands are used as space fillers. Rather it is a brief, clear set of directions as to what to do and how to do it as regards both diseases and injuries of the eye, ear, nose and throat.

Although the book is primarily intended for Army and Navy doctors, there is plenty of sound information that all physicians should know. It is written by a staff of experts, and is a commendable piece of work.—*M. P. S.*

Disabilities occasioned by war are covered in full

86c out of each $1.00 gross income used for members benefit

PHYSICIANS CASUALTY ASSOCIATION
PHYSICIANS HEALTH ASSOCIATION

Hospital, Accident, Sickness
INSURANCE

For ethical practitioners exclusively
(57,000 Policies in Force)

LIBERAL HOSPITAL EXPENSE COVERAGE	For $10.00 per year
$5,000.00 ACCIDENTAL DEATH $25.00 weekly indemnity, accident and sickness	For $32.00 per year
$10,000.00 ACCIDENTAL DEATH $50.00 weekly indemnity, accident and sickness	For $64.00 per year
$15,000.00 ACCIDENTAL DEATH $75.00 weekly indemnity, accident and sickness	For $96.00 per year

40 years under the same management

$ 2,220,000 INVESTED CLAIMS
$10,750,000 PAID FOR CLAIMS

$200,000 deposited with State of Nebraska for protection of our members.

Disability need not be incurred in line of duty—benefits from the beginning day of disability.

Send for applications, Doctor, to

400 First National Bank Building - Omaha, Nebraska

PRESCRIPTIONS COMPOUNDED WITHOUT SUBSTITUTION BY THESE

RELIABLE DRUGGISTS

A CONVENIENT LIST FOR THE PHYSICIAN

PATRONIZE APPROVED DRUGGISTS

PHOENIX, ARIZONA

WAYLAND'S
PRESCRIPTION PHARMACY
"PRESCRIPTION SPECIALISTS"
BIOLOGICAL PRODUCTS ALWAYS READY FOR INSTANT DELIVERY
PARKE-DAVIS BIOLOGICAL DEPOT
MAIL AND LONG DISTANCE PHONE ORDERS RECEIVE IMMEDIATE ATTENTION
Professional Bldg. Phone 4-4171 Phoenix

DORSEY-BURKE DRUG CO.
PHOENIX' QUALITY DRUG STORE
RELIABLE PRESCRIPTIONS
FREE DELIVERY
Van Buren at 4th St. Phoenix
Phone 4-5611

Please mention SOUTHWESTERN MEDICINE when answering advertisements